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ABSTRACT

This book was designed with activities for children in kindergarten through sixth grade. The activities are designed to increase student awareness about the environment and its protection. The book presents basic concepts and several perspectives on environmental issues. Each section contains numerous activities. Section titles include: (1) "Introduction"; (2) "Introducing the Planet"; (3) "Discovering Habitats"; (4) "Endangered Habitats"; (5) "Cooperation in a Habitat"; (6) "Empowering Youth"; (7) "Proving Your Power"; and (8) "Resource Section." (EH)

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OF A

MARY METCALF DIANE SIMMONS

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To Duane, John, Ann, and Amy, my global family; and to Michael who thought the zoo tiger wanted his jungle back.

Mary Metcalf has taught at the elementary level in the Aurora Public School District, Colorado, for six years. She also taught at the kindergarten and preschool level for a number of years. She received her M.A. in Curriculum and Instruction, with a cognate in International Relations, from the University of Denver.

For my husband, Barry, and my son, Jacob.

Diane R. Simmons is an elementary teacher who has taught first, fourth, and fifth grade. She received her B.A. from Regis College, Denver, Colorado, and earned an M.A. in Curriculum and Instruction with a cognate in International Relations from the University of Denver. She has edited several publications and coauthored World Food Day: Curriculum for Grades 4-7 published by the Office of Global Education, Church World Services and the Center for Teaching International Relations.

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I. INTRODUCTION

We do not own this Earth, but we are its caretakers. In our modern world we are becoming more appreciative of the Native American philosophy of nature. In 1855, United States government officials sent word to Seattle, Chief of the Dwamish and Allied Tribe of Puget Sound, of their desire to buy land. Seattle replied,

> How can you buy or sell the sky, the warmth of the land? The idea is strange to us . . . What is man without the beasts? If all the beasts were gone, men would die from a great loneliness of spirit. For whatever happens to the beasts soon happens to man. All things are connected.

This curriculum is meant to increase children's joy and wonder in their environment. It is not meant to censor groups of people such as oil drillers who, as is pointed out in one activity, need to provide for their families.

Most people appreciate lovely creatures such as otters and butterflies. After participating in these activities, it is hoped that children will also appreciate the "unlovely" such as bats and spiders! The activities are designed to give even very young children a feeling of empowerment. We can all appreciate the interconnectedness of all species. We humans require the infrastructure that all species provide to us. After becoming aware of Earth's fragility, we can hope that children and adults act as caretakers of Earth's wonders!

Caretakers of A Good Planet was designed with activities to appeal to children in kindergarten through sixth grade.

Mary Metcalf has written the K-3 curriculum to introduce and involve the children in their environment.

Diane Simmons wrote the activities for the upper elementary students with the same aim and also incorporated a variety of skills and content suited to the older child.

Most of the subjects have been addressed at both levels so the basic concepts can be presented to all of the children. The authors hope that you will inform, involve, and educate your students so that they can become caretakers of a good planet.

Note To Teachers

We suggest that you save much of the children's work to display at a special program, or as a part of a back-to-school event.

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II. INTRODUCING THE PLANET

Title: WHY IS PLANET EARTH SO SPECIAL?

Introduction: People rarely consider why we are able to exist on this planet. Our planet offers an abundance of things necessary for life and this lesson will help young children become aware of these basic elements. It is hoped this awareness will increase their wonder and concern for these resources.

Objectives:

To discover the life-giving resources of Earth
To begin to recognize how valuable and fragile our planet is

Grade Level: K-3

Time: 20 minutes

Materials: Handout #1, "To Live We Need"
Crayons

Procedure:

1. Ask: "What does a dog need to live (water, food)?" Help the children discover that a dog also needs air to breathe and heat from the sun to stay warm. More knowledgeable students might be able to add that they need clean water and air and that we need to be aware of pollution problems on our planet.

2. Ask the same question about cats, birds, fish (talk about how a fish uses gills to breathe), plants, and people.

3. Give each child Handout #1. have them fill in the blanks at the bottom of the paper and color the picture if they have time.

Follow-up Questions:

1. What are some things that other animals such as bats, otters, and human babies need to live?

2. Why is Earth such a special planet?

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3. Do you think we could find water, food, air, and heat on other planets?

Evaluation: Did the children discover what our planet has to offer in the way of life-giving resources? Can they explain the reasons all forms of life need these resources?

Further Suggestions:

1. Having a small classroom pet would give firsthand experience with these needs.

2. Plants can be grown in the room to demonstrate the needs. Simple experiments could be done with the plants to predict what might happen if the plant did not have sunlight (place plant in dark cupboard) or did not have water (do not water!).

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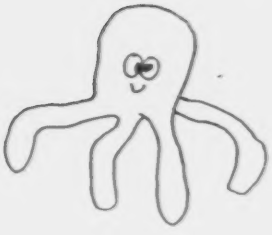
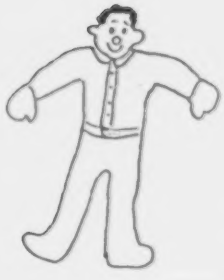
TO LIVE WE NEED...





To live we need:

_____ _____

_____ _____

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Title: PLANET EARTH IS FUN TO DISCOVER!

Introduction: Given a few basic directions, primary children are able to begin to understand the importance of a globe. They are able to label many things that a globe depicts.

Objectives:

To become familiar with what is on a globe
To discover it is warm around the equator and cold at the poles

Grade Level: K-3

Time: 30 minutes

Materials: One or more globes
Blanket to cover one globe
Handout #2, "The Globe"
Crayons

Procedure:

1. Draw a large sun on the chalkboard. Using a globe, tell students how our planet spins around the sun. Talk about how the Earth is just the right distance from the sun. Explain how it would be too hot on our planet if it were any closer and too cold if it were any further away. The temperature is just right for plants, animals, and people.

2. Using the globe, acquaint children with the blue of the water and how other colors represent land. Have several children practice finding land and water.

3. Point out the equator. Describe how this area is closest to the sun so it is warmer.

4. Point out the North and South Poles. Describe how the poles are further away from the sun. This creates a very cold climate. Contrast animals that live at the equator (elephant, giraffes, monkeys) with those that live at the poles (penquins, seals, polar bears). These animals have much fat called blubber to keep them warm.

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5. Cover the globe with a blanket. Explain that this represents a blanket of air that surrounds our planet. The children can practice saying the word "atmosphere." Help the children understand that Earth is the only planet that has air for us to breathe, as far as we know.

6. Pass out Handout #2. Have the children color in land, water, the equator and the poles on their paper.

7. Ask each child to tell the group where each of the four items are located on his/her "globe." Ask children to compare and contrast other globes to see if they can transfer what they have learned about water, earth, the equator, and the poles. Suggest that they look at any globes they may have at home to see if they can find land, water, the equator and the poles.

Evaluation: Were the children able to correctly identify land, water, the equator, and the poles? Could they explain the difference in temperature between the equator and poles?

Further Suggestions: It would be interesting to display a large flat world map to see if the children could make further comparisons and contrasts.

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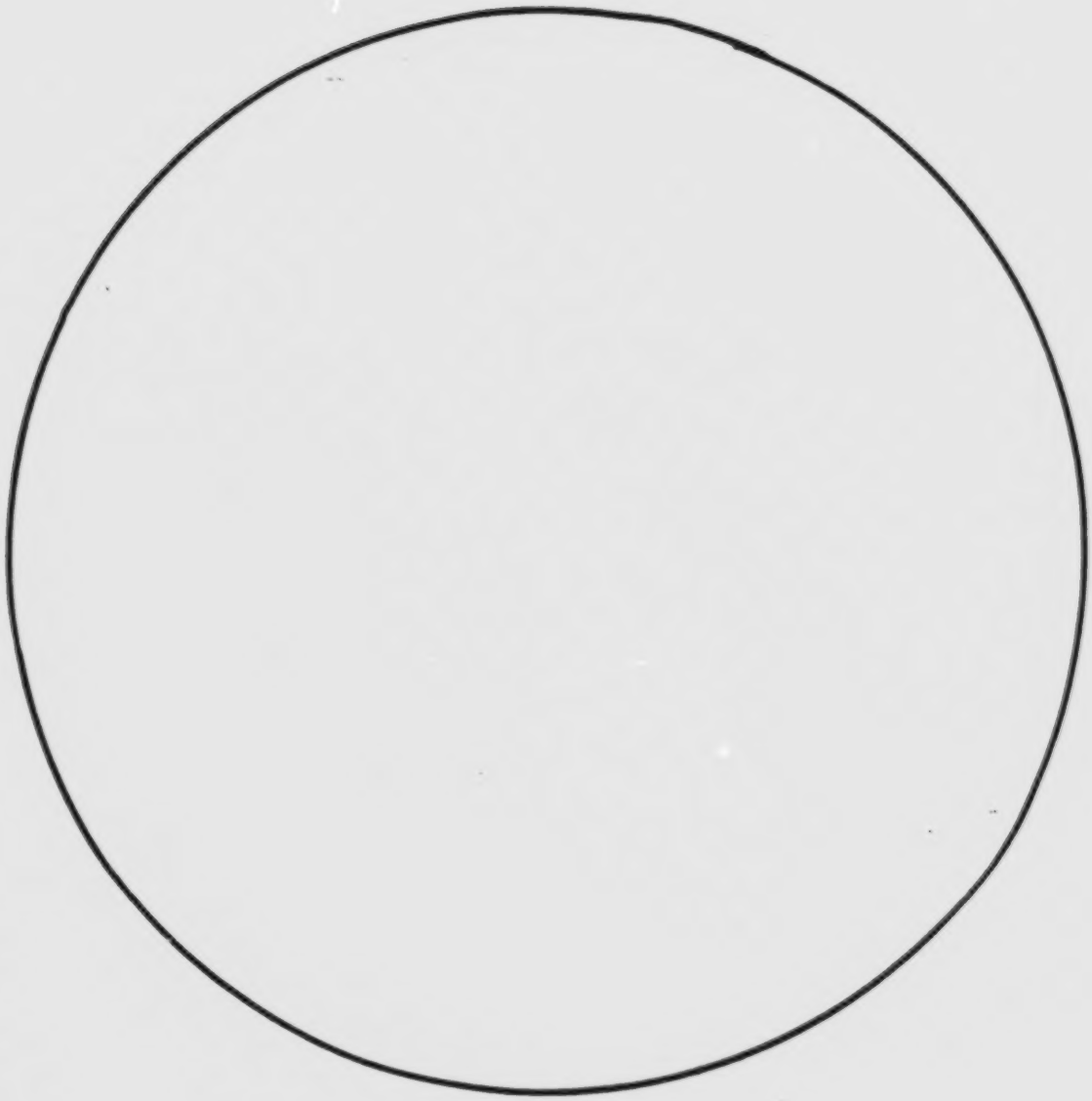
Handout #2

THE GLOBE



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Title: THE WORLD AND ITS RESOURCES

Introduction: Geography and natural resources are combined to acquaint the students with their world.

Objectives:

To identify various points on our world
To learn about renewable and nonrenewable resources

Grade Level: 4-6

Time: One to two weeks

Materials:
- Globe
- Round balloons
- String, 1 1/2 ft. long (one per student)
- Glue and water, premixed with three parts glue to one part water, put in jars or containers (one per student), with a spoon to stir mixture
- Strips of colored comics
- Strips of newspaper
- Strips of white paper
- Paints and paint brushes
- Handout #3, "Nonrenewable Mineral Resources"
- Chalkboard

Procedure:

1. Hold up a globe for the students to see. Ask for a volunteer to point out the equator and to explain its purpose, or tell something else about it. Repeat the procedure with the North and South Poles, latitude and longitude, each of the five continents, and the three oceans.

2. Add to the explanations and complete the definitions the students gave if necessary.

3. Tell the students that they are going to make a globe and label some of these items on their globes. Distribute the balloons, string, jars of glue, and strips of the colored comic paper.

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4. Have students inflate the balloon, make a knot, and tie the string around the knot. Each student should then dip strips of comic paper into the glue mixture and wrap then around their balloon. Cover the entire balloon with glued comic paper.

5. Hang up the balloons by the string and allow the glue to dry.

6. Repeat the procedure with newsprint first and then finish with white paper.

7. When the final coat of paper has been added and the glue is dry, hand out the paints and paint brushes. Have the students paint the continents, oceans, and the equator on their globes. While the paint is drying, conduct the second part of the lesson.

8. Ask students to name some natural resources. Write their responses on the chalkboard. (If they have trouble, help them to define the term.)

9. Explain that there are renewable and nonrenewable resources, what that means, and give a few examples of each.

   Renewable - capable of being replaced by natural ecological cycles; for example, water, air, plants.

   Nonrenewable - when known global reserves are depleted, the resource ceases to exist, resources do not naturally produce more; for example, gold, petroleum, copper.

10. Write two columns on the chalkboard labeled Renewable and Nonrenewable. Have the students categorize the resources already listed on the chalkboard. Read the following and with student input, continue to put them in the proper columns.

RENEWABLE	NONRENEWABLE
cotton	Aluminum
electricity	chromium
wood	coal
rubber	copper
plastic	gold
food	iron
water	lead
leather	mercury
air	natural gas
plants	petroleum

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11. Distribute Handout #3, to the students. Explain and discuss.

12. Using the globe, atlas, or world map instruct the students to find the continents for each of the countries listed on the handout and write it beside the country.

13. Once again bring out the paints and paint brushes and tell the students to make a small dot on the continents for each nonrenewable mineral resource found there.

Follow-up Questions:

1. Look at your globe and the distribution of the resources. Which continent has the most, the fewest?

2. Do you think that there is a relationship between power and the number of resources a country has? Why or why not?

3. What will happen when a resource is depleted?

4. What are the similarities between a nonrenewable resource and an endangered animal?

Further Suggestions:

1. Have students research the "life expectancy" for some of the nonrenewable resources.

2. Have students find the uses for the nonrenewable mineral resources and what products have been developed to replace them.

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NONRENEWABLE MINERAL RESOURCES

RESOURCE	COUNTRIES OR AREAS WITH HIGHEST RESERVES
Aluminum	United States Canada Commonwealth of Independent States
Chromium	Republic of South Africa Commonwealth of Independent States Albania
Coal	United States Commonwealth of Independent States China
Copper	Chile United States Commonwealth of Independent States
Gold	Republic of South Africa Commonwealth of Independent States Canada
Iron	Commonwealth of Independent States Brazil Australia
Lead	Australia Commonwealth of Independent States United States

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RESOURCE	COUNTRIES OR AREAS WITH HIGHEST RESERVES
Manganese	Commonwealth of Independent States Republic of South Africa Gabon
Natural gas	Commonwealth of Independent States Iran United Arab Emirates
Nickel	Commonwealth of Independent States Canada Australia
Petroleum	Saudi Arabia Iraq Kuwait
Platinum	Commonwealth of Independent States Republic of South Africa Canada
Silver	Mexico Canada United States
Tin	Malaysia Indonesia Thailand
Zinc	Canada Commonwealth of Independent States Australia

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Title: COULD ONE KID'S TRASH BE ANOTHER KID'S TREASURE?

Introduction: The amount of trash around the world has become a serious problem. Yet in some countries very little, if any, trash is generated. A visitor to the Commonwealth of Independent States recently looked several days for a trash can in the host family's apartment. One tiny bucket was finally discovered. It was emptied once a week. Hopefully, the classroom will already have a recycling box for paper. In this activity children will look for creative ways to reuse old, worn out items. This activity will go much smoother if classroom discussions have already taken place about what things are made of and what resources need to be conserved, such as petroleum and tree products.

Objectives:

To compare and contrast objects made from sources easily found and those made from scarce resources
To identify new uses for old or out of use objects

Grade Level: K-5

Time: 30 minutes

Materials: Each child should bring an old toy or book or other item no longer used by student from home
Items from the classroom that are to be discarded

Procedure:

1. Let each child show his/her old item and tell from what that item is made. Is it made of wood, sand, metal, fabric, leather, a plant or is it a petroleum product? Is that resource one that we need to conserve? Set each item on a table.

2. After each item has been described, have a few children at a time go to the table and select an item that appeals to them. They need to think of a new use. For example, if there is a book with pictures they like, they might want to cut the pictures out to make a new book. Of course, the teacher would need to emphasize that this can only be done to old, worn-out books. One child might choose a worn-out mechanical toy which no

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longer works. That child might want to take it apart and discover how it works, then try to make it work again, or create a new toy out of the pieces. Let the children use their imaginations. What could be done with a puzzle with missing pieces? Is there a child with an idea to make a doll with a missing leg appealing?

3. Let each child show his/her "new" invention and explain how it can now be his/her treasure.

4. Praise the children for thinking up ways to recycle old, worn-out items. Accept all ideas, no matter how ridiculous they may seem. Tell them they are taking care of our resources whenever they recycle.

5. List on the chalkboard all the things that children recycle in the classroom and in their homes.

Follow-up Questions:

1. What are objects made of sand, metal, fabric, plants and petroleum?

2. Why do we need to recycle as much as possible on our planet?

3. What are some things you throw away that you might now be able to think of other uses?

Evaluation: Were all children able to participate? Did they know from what type of material their objects were made? Did they know if these materials were becoming scarce? Were they imaginative in their ideas for new uses for their old toys?

Further Suggestions:

1. Have students draw pictures of their old and new toys/books.

2. Have students talk about what they do with their old clothes. How can clothes be recycled?

3. If no recycling is done at your school, have students begin such a project.

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Title: OKAY SPILLS! NO WAY SPILLS!

Introduction: We all spill things, but what happens when chemicals, trash, or oil are spilled in our environment? Young children can begin to be aware of every individual's responsibility to keep our habitats clean.

Objective:

To become aware of effects of chemical and oil spills on animal life

Grade Level: K-5

Time: 20-30 minutes

Materials: Newspapers
Aluminum pie pans to hold the liquids and wet feathers and fur
Small amounts of milk, paint, juice, and motor oil
Pieces of fake fur
Feathers
Soap and water
Paper towels

Procedure:

1. Cover the floor with newspapers to catch drips. Pour a little of each liquid into an aluminum pie pan. Then put a piece of fur and a feather in each pan.

2. Have students attempt to clean the fur or feather with water, soap, and paper towels.

3. Discuss whether or not the liquid could be cleaned off the feather or fur.

4. Sort liquids into two categories, which can be cleaned up and which cannot.

Follow-up Questions:

1. What liquids could you easily clean-up? Which liquids were difficult to clean?

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2. Can you think of other things we could use to try to clean the fur and feathers? Discuss what happens to animals when they go to get a drink or go swimming when oil has been poured into the water.

3. How can the animals be cleaned up when oil gets into their fur or feathers? Talk about how water for people must also be clean.

4. What might happen if we drink dirty water?

5. Have you spilled other things? Could they be cleaned up easily.

6. We can see dirty, polluted water, but it is not as easy to see dirty air. Do you think dirty air might harm bird feathers or scales of butterflies?

7. How might it harm the lungs of animals?

Evaluation: Have children individually sort the various liquids. The "okay" spills could be set on a happy face, and the others could be set on a sad face.

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Title: COUNTING CRITTERS

Introduction: This is a software program designed for the Apple IIe computer. It includes several habitats such as a jungle, a pond, and a pet store where children are required to count the number of animals and find the numeral that tells how many. Children can be reminded that there are many habitats on our planet, but many are being overrun by man. Animals are sometimes impossible to count because there are so many. However, endangered animals can be easily counted, unfortunately.

Objectives:

To recognize some types of animals
To become familiar with several types of animal habitats

Grade Level: K-3

Time: 15 minutes

Materials: Apple Computer
MECC disc Apple #A-165, "Counting Critters" by C-MECC, 86 version, 1.0 DOS, 3.3M, C-Apple, Inc.

Procedure:

1. Load the software and bring up one of the habitats to demonstrate how the animals are counted and the correct number is chosen.

2. Introduce the various habitats and demonstrate how the students can choose their games.

3. Have students demonstrate their understanding by playing the game. Set up as a center for individual practice.

Follow-up Questions:

1. What types of animals did you see in our game?

2. Where do these animals live?

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3. Do you think any of these animals are endangered species?

4. Can you think of other habitats that could have been included in this game?

Evaluation: Are the children able to use the computer independently? Are they improving their counting and number recognition skills with this game? Are they becoming aware of animals and the various habitats on our planet?

Further Suggestions:

1. Have children read books about animal habitats and draw pictures of the habitats and animals.

2. Have students exchange papers and have a neighbor count the animals drawn and write the numeral that tells how many.

3. Another computer program that could be implemented with this unit is called "KidWriter" by MECC. The children can create their own habitats, animals, and stories on the computer.

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Title: ANIMAL LOVERS CREATE A BEAUTIFUL, WATERY WORLD

Introduction: In the first activity, "Why Is Planet Earth So Special?," children learned that animals must have fresh water to live. In this activity children will prepare a picture showing the need for water. This will prepare them for the following activity when they must rescue their animals.

Objective:

To realize the importance of fresh, clean water in all animal habitats.

Grade Level: K-3

Time: 15 minutes

Materials: Long blue bulletin board paper which has been shaped into a river, a lake, and an ocean
Paper for individual pictures

Procedure:

1. Ask the children to talk about their favorite animals and where these animals live.

2. Emphasize that all of the animals discussed need water in order to live. Point out the long mural which you have begun with the blue paper representing a river, a lake, and an ocean.

3. Give each child a piece of paper to draw his or her favorite animal. Have the children cut their animals out and glue them them on the blue paper in the appropriate spot. For example, a fish could be in any of the waters depicted, a moose could be drinking at a river or lake, and a whale would be glued on the ocean. Desert animals could be placed away from the water, but children need to know they get tiny amounts of water from cactus leaves, roots, etc.

Follow-up: Allow the mural to decorate the room for several days. At the close of the last day tell the children that something very sad is happening to the mural. When they

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come to school the next day it will look quite different. (See activity titled "Animal Lovers to the Rescue!")

Evaluation: Were the children able to think of a favorite animal and illustrate it? Were they able to place it in the proper place on the mural? This would demonstrate a fairly good understanding of animal habitats if they were able to understand where their animals would get water.

Further Suggestions: Prepare a classroom book using student illustrations. Have each student write or dictate to the teacher, "My animal would like to get a drink from _____. (i.e., a pond, stream ocean) He likes clean, unpolluted water!"

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Title: AN ANIMAL'S BASIC NEED

Introduction: In order to demonstrate the necessity of water for animals, the students discover that animals around the world adapt their intake or live near water.

Objectives:

To become familiar with the various sources of water for animals
To learn about the correlation between animals, their country of origin, and its water source

Grade Level: 4-6

Time: Sixty minutes

Materials:
- Large world map
- Chalkboard and chalk
- Handout #4, "Animals Around the World," cut into squares
- Construction paper
- Markers
- Scissors
- Tape

Procedure:

1. Begin the lesson by posing the question, "What is essential for humans to live (air, water, food, shelter etc.)?"

2. Ask which of these also applies to animals. Discuss why each is important. While all are necessary, explain that the students will be focusing on water.

3. Put the world map where everyone can see it. Have the students tell you the various habitats where animals live. Write them on the chalkboard (jungle, desert, ice polar, oceans, plains, mountains).

4. Talk about where animals get their water in each of the areas (rivers, lakes, oceans, raindrops, puddles, vegetations, etc.).

5. Lead the students to discover that the amount of water needed by each animal may also dictate where they live.

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6. Distribute a square cut from Handout #4 to each student. Explain that their task will be to draw that animal on the paper you give them using various art supplies. The animals are to be about 2" x 3" each.

7. Each student will also need to know where their animal lives in the world so they may need to make a quick trip to the library if they are unsure.

8. Finally, let each student go up to the map and tape their animal in the appropriate place. Have each student tell the water source for their animal.

Follow-up Questions:

1. Is water always available to animals when they need it? Why or why not?

2. What can affect the amount and quality of water the animals have access to?

3. What happens to animals when their water supply changes?

4. Can lack of good air, food, and shelter also affect the animals like water does? Why or why not?

Further Suggestions:

1. Ask students to discuss the impact of water on human life.

2. Keep the map up for the students to see and for further activities.

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ANIMALS AROUND THE WORLD

Polar Bear	Spider	Monkey	Koala Bear	Gorilla
Panda	Zebra	Elephant	Kangaroo	Big Horn Sheep
Butterfly	Duck	Tiger	Porcupine	Crane
Jaguar	Bee	Rattlesnake	Penquin	Grizzly Bear
Artic Wolf	Frog	Hummingbird	Rhinoceros	Eagle
Chipmunk	Lizard	Mouse	Gila Monster	Antelope

Note: Many of these animals can be located on two or more continents. The teacher may want to assign continents as well to get a variety.

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Title: ANIMAL LOVERS TO THE RESCUE!

Introduction: This lesson should follow the activity entitled "Animal Lovers Create a Beautiful, Watery World" where the children created a mural showing where animals go to drink water.

Objective:

To explain ways to clean up water for the animals who use it

Grade Level: K-3

Time: 20 minutes

Materials: Black paper representing an oil slick to cover the mural
Chalkboard

Procedure:

1. A large piece of black paper should be rolled over the mural before the children enter the classroom. Their beautiful water picture has been polluted.
2. Explain that there has been an accident with oil. It has covered their animals' habitats and the animals need their help.
3. Have students discuss ways to clean up an oil spill.
4. Write their answers on the chalkboard.
5. Discuss the validity of the answers.
6. Remove black "oil slick" paper after discussing their ideas.

Follow-up Questions:

1. What ways do you think are best for cleaning up an oil spill?

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2. Can we stop putting oil into big ships and sending it to other places?

3. Why do we need oil?

Evaluation: Did most of the children contribute an idea on how to clean-up the oil?

Further Suggestions:

1. One "Show and Tell" session could be devoted to how our water is polluted. Have students look in the newspapers for articles on water pollution with parental help if needed.

2. Talk about other forms of pollution. Have students find pictures and articles about this.

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III. DISCOVERING HABITATS

Title: PEOPLE HABITATS

Introduction: People adapt to many different types of habitats, according to their needs. In this lesson the children will become aware of their own habitat and how it offers both good and bad things for them.

Objectives:

To become aware of the wonders in his/her own backyard
To be stimulated to create an even better environment

Grade Level: K-3

Time: 30 minutes

Materials: Chalkboard
Colored chalk
Handout #5, "My Habitat"

Procedure:

1. Define habitat as the place where living things make their home and plants, animals, and people all have their own habitats.

2. Have the children look out the window and talk about what they see. Are there mountains, hills, plains, rivers, trees, flowers? What kinds of animals live in this neighborhood? Are there dogs, cats, birds, squirrels, tigers, whales, bears, etc.?

3. Have a few children draw some of these things on the chalkboard.

4. Ask students what they would like to have in their own habitat. Would you like to live by the ocean, jungle, forest, etc.? Draw a line down the chalkboard and have a few children draw what they would like to see in their habitat.

5. Give each child a copy of Handout #5. Explain that the top area is for them to draw their own habitat or backyard, or neighborhood, whatever you want to call it. The bottom area is for them to draw their fantasy habitat. Where would you like to live? What animals would you like to have in your habitat?

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Follow-up Questions:

1. What are the best things about your habitat? The worst?

2. Does your habitat have fresh air and water or is this a problem?

3. What can you do to make your own habitat better?

Evaluation: Were the children able to understand the term "habitat" and draw or describe their natural surroundings? Do they recognize that we have pollution problems on our planet? Are they concerned about making their world better?

Further Suggestions:

1. If some students or parents have lived in areas where the habitat is a contrast to the one in which your students now live, invite them to share stories and pictures of these places.

2. Have students make a list of the good things in their habitat and a list of the things that need to be improved such as air or water quality.

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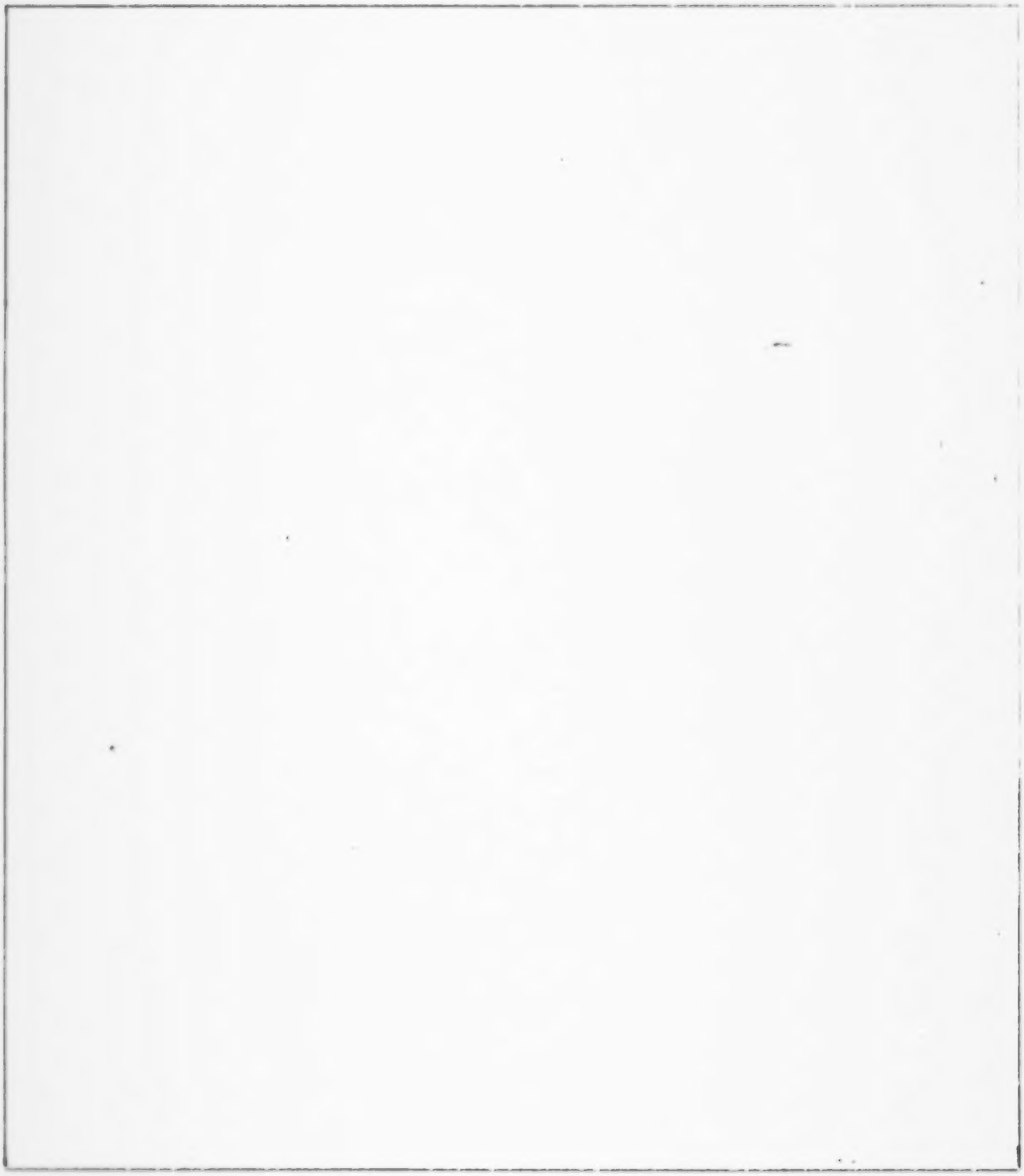
MY HABITAT



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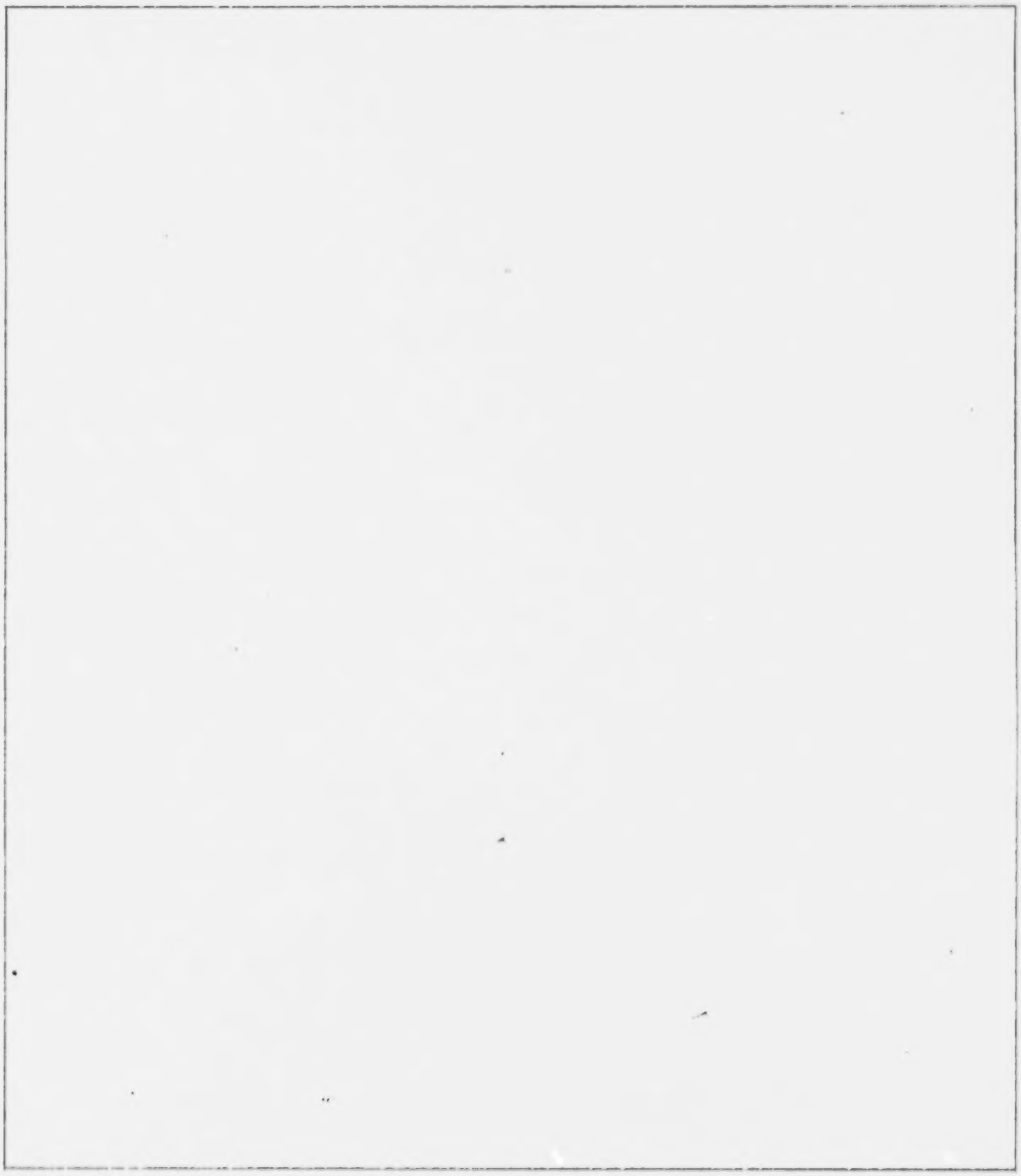
MY FANTASY HABITAT



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Title: HABITATS--REAL AND IMAGINED

Introduction: This activity is designed to challenge the students to create a new pollution-free environment for themselves.

Objectives:

To become familiar with student's present habitat and the pollution problems that exist
To find solutions for pollution and design a new environment

Grade Level: 4-6

Time: 45 - 60 minutes

Materials: Paper for drawing
Markers
Butcher paper, or chalkboard and chalk
Paper (3-4 pieces)
Crayons or markers
Glue
String

Procedure:

1. Without much introduction, instruct the students to portray their current habitat on paper. Do not place limitations on what aspects should be depicted.

2. Compare the habitats and discuss what the students like about their environment. Write their answers on butcher paper or on the chalkboard.

3. Talk about the negative aspects of their habitat, focusing on pollution problems. Also record these responses.

4. Have the students brainstorm possible solutions, to existing problems. The solutions can be real or imagined. (If the students are unfamiliar with brainstorming, you should explain all of the rules first.)

5. Using the information the students have generated, instruct them to design and draw a new cleaner, healthier habitat.

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6. Ask for volunteers to show their picture and explain the environmental benefits and how they were achieved.

Follow-up Questions:

1. Was it difficult to create a new habitat? Why?

2. Is it similar/different compared to our habitat?

3. What other living creatures reside in your new environment?

4. Realistically, how long do you think it will take our current habitat to become like the one you designed? Why?

5. What is one thing you currently do to help the environment?

6. What is one new thing that you could do to lessen pollution?

Further Suggestions:

1. Glue the two habitat pictures back-to-back with pieces of string in between and hang them in the classroom.

2. As a class decide on one solution to enforce either at home or school.

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Title: AN ANCIENT HABITAT

Introduction: Young children are fascinated with dinosaur stories. This activity will help them to realize that there is still much that even scientists need to learn about these prehistoric beasts. There is a great deal of controversy in scientific circles about dinosaur habitats.

Objective:

To imagine and illustrate the type of habitat in which dinosaurs might have lived

Grade Level: K-3

Time: 30 minutes

Materials: White construction paper, one for each student
Dinosaur animal crackers, 2-3 for each child to use in the activity and some extra to eat
Glue
Crayons

Procedure:

1. Explain that most scientists seem sure that there were many very tall trees, an abundance of huge ferns, and tall grasses much taller than any we know today that helped to feed the dinosaurs. The earth must have been very green, but there probably weren't many flowers, if any during this age. On the forest floor there were many small ferns and mosses.

2. Explain that some scientists believe huge dinosaurs must have lived in swampy areas and shallow lakes to help them move around as they were so big. Other scientists believe dinosaurs hated swamps and water and lived on floodplains that were usually dry. Sometimes the plains did flood. During flooding some scientists believe the dinosaurs moved on until they found dry land.

3. Give each child a piece of construction paper and allow a choice of two or three dinosaur animals crackers which should be glued to the paper.

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4. Using crayons, let the children draw the trees, ferns, grasses that their dinosaurs need for food. Next have them draw a large lake or a lot of land, depending on what they believe the dinosaurs' habitat might have been.

5. Assemble, as a group and allow each child to display his or her picture. Have each student tell about their picture and justify the type of habitat drawn.

6. Pass out the rest of the crackers as a treat! Pictures could be displayed around the room.

Follow-up Questions:

1. Do scientists know all there is to know about dinosaur habitats?

2. On what do they agree? On what do they disagree?

3. Will we ever know for sure just how dinosaurs lived? Why or why not?

Evaluation: Could the children adequately illustrate their dinosaur habitat? Were they able to tell in their own words which type of habitat they drew? Were some of the children able to justify their choice of habitat? This last question would be difficult for some of the younger children.

Further Suggestions:

1. Have students look for additional books on dinosaurs in the class library or school library.

2. Explain to students about the differences between meat-eating and plant-eating dinosaurs; further explain that dinosaurs and the plant life during this time period produced our fossil fuels on which our world is so dependent. Heat and pressure on the dead matter turned the plant and animal life into coal, oil, and natural gas. Emphasis could be placed on the fact that this is a nonrenewable resource and must be conserved as much as possible.

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Title: ANIMAL HABITATS

Introduction: Animals adapt to many different types of habitats according to their needs. In this lesson the children will become aware of the many places animals live.

Objectives:

To recognize that there are many types of animal habitats
To appreciate the wonderful diversity of animal life and animal habitat on our planet

Grade Level: K-3

Time: 20-30 minutes

Materials
- Transparencies of habitats from Handout #6, "Animal Habitats"
- Overhead projector
- Handout #6, "Animal Habitats," one for each child and folded into a book per instructions at end of activity
- Crayons

Procedure:

1. Review the meaning of habitat. (The place where living things make their home.)

2. Project the animal habitats, one at a time. Have the children brainstorm what types of animals might live in each of these environments. List these animals on the habitat picture according to the level of the children. The habitats will include water, forests, jungles, deserts, dark holes (caves), and above and below ground homes.

3. After each type of habitat has been discussed, pass out a little book (Handout #6) to each child. Have student draw a picture of an animal appropriate to each type of habitat. Younger children might need much structure here. The teacher could say, "On page number 2 draw a _____ because this animal lives _____."

4. Try reading the books as a large group.

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Follow-up Questions:

1. How are these habitats the same and different?

2. Why would a polar bear be unable to live in the jungle?

3. Why might monkeys like living in trees instead of on the ground?

4. Why can't a fish live underground or in a tree?

Evaluation: Were the children able to understand the likenesses and differences between the habitats? Were they able to think of animals to put in each of the habitats in their little books?

Further Suggestions:

1. Make a "big book" using the habitat pages already discussed. Have student choose a favorite animal and draw it in its proper environment in the book.

2. Whenever the teacher reads about an animal, have the children discuss what the animal's habitat might look like.

3. Bags of inexpensive plastic animals can be purchased at discount stores. Have students sort these toys by habitat, by what they are covered with (fur, feathers, scales, skin), by how many legs they have, etc.

Book Folding Instructions:

1. Fold the copy of Handout #6 in half lengthwise.

2. Fold in half again, as in a book.

3. Fold in half again.

4. Unfold sheet.

5. Fold in half width-wise.

6. Cut or tear on the center crease from the folded edge to the middle of the sheet.

7. Open the sheet and return to the original lengthwise fold.

8. Push the end sections together and it will fold itself into a book, four sections.

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SOME ANIMALS LIVE IN WATER.

2

45

SOME ANIMALS LIVE IN FORESTS.

3

SOME ANIMALS LIVE IN JUNGLES.

4

SOME ANIMALS LIVE IN DESERTS.

46 5

SOME ANIMALS LIVE IN DARK HOLES.

6

SOME ANIMALS LIVE ABOVE GROUND.

7

SOME ANIMALS LIVE BELOW GROUND. WHERE ELSE MIGHT ANIMALS LIVE?

8

ANIMAL HABITATS

Title: HABITAT MYSTERIES

Introduction: Critical thinking skills are utilized as the students learn about animal habitats.

Objective:

To use deduction to solve a habitat mystery

Grade Level: 4-6

Time: 30-45 minutes

Materials: Handout #7, "Habitat Grid"
Chalkboard

Procedure:

1. List the following words across the chalkboard with space underneath: desert, jungle, mountains, ocean, and Arctic regions.

2. Explain that these are examples of various animal habitats. Ask the students to describe each of the places. Record their responses on the chalkboard under the appropriate title.

3. Distribute Handout #7 to the students and write a sample grid on the chalkboard. Give directions on how the students are to deduce the habitat of an unfamiliar animal as you give them clues. Using the first clue as an example, have the students determine which habitat is most obviously eliminated by the clue, e.g., "I have thick fur" eliminates desert.

4. As a class, do one or two examples together. Use the chalkboard to do the examples as students follow along on their handout. The clues and answers follow this activity.
5. Answer questions, share strategies, and develop the thought processes to solve the habitat mysteries.

6. Read the clues for the remaining animals and their habitats.

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Follow-up Questions:

1. Was it difficult/easy to decide on the correct habitat? Why or why not?

2. Could some of the animals fit into one or more habitats? If so, which ones?

3. What habitats are changing and/or becoming endangered? Include examples from the habitats given as well as others.

4. Which of the animals discussed in the lesson could be effected as a result?

Further Suggestions:

1. Once the students feel confident with their skills of deduction, have them write clues for familiar animals. Solve the habitat mysteries as a class or individually.

2. To show the similarities and differences in the habitats, the students could illustrate them.

Clues and Answers:

1. Example #1

   A. I have thick fur. (eliminate desert)

   B. My favorite food lives in the ocean. (eliminate mountains)

   C. There isn't much vegetation where I live. (eliminate jungle or ocean)

   D. I am white like my surroundings. (eliminate ocean or jungle)

   E. Do you know what animal I am and in which habitat I live? (polar bear, Arctic region)

2. Example #2

   A. I am white and I have four legs. (eliminate ocean)

   B. Most of the year it is cold where I live. (eliminate desert or jungle)

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C. I primarily eat plants. (eliminate desert or Arctic)

D. I am very agile and sure-footed on steep rocks and peaks. (eliminate jungle or Arctic)

E. Do you know what animal I am and in which habitat I live? (mountain goat, mountains)

3. Example #3

A. I do not like cold places. (eliminate Arctic regions)

B. There isn't much water where I live. (eliminate ocean)

C. I like to slither or crawl on relatively flat surfaces. (eliminate mountains)

D. I often shed my skin which can be found in the very dry area of my home. (eliminate jungle)

E. Do you know what animal I am and in which habitat I live? (rattlesnake, desert)

4. Example #4

A. There is an abundance of plants in my home. (eliminate desert or Arctic regions)

B. Many different bright colors surround me. (eliminate Arctic regions or desert)

C. I am a mammal without fur so I prefer a consistently warm climate. (eliminate mountains)

D. I like to eat lots of small fish while I swim even though I am quite large. (eliminate jungle)

E. Do you know what animal I am and in which habitat I live? (whale, ocean)

5. Example #5

A. I generally don't like water except to drink. (eliminate ocean)

B. It is very hot where I live. (eliminate Arctic regions)

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C. I like to swing from trees. (eliminate desert)

D. I eat fresh fruit all year long. (eliminate mountains)

E. Do you know what animal I am and in which habitat I live? (monkey, jungle)

6. Example #6

A. My favorite food is fish. (eliminate desert)

B. I don't live in water but I like to swim. (eliminate ocean)

C. Pine trees don't grow where I live. (eliminate mountains)

D. I am all dressed up in a black and white fur coat for the icy cold nights where I live. (eliminate jungle)

E. Do you know what animal I am and in which habitat I live? (penguin, Arctic regions)

7. Example #7

A. It snows in the winter where I live but it melts and is warm in the summer. (eliminate desert or jungle)

B. The water near my home is not salt water. (eliminate ocean or Arctic)

C. I gather nuts and berries to eat. (eliminate Arctic or ocean)

D. I am small in a place where there are many rocks and peaks. (eliminate jungle or desert)

E. Do you know what animal I am and in which habitat I live? (chipmunk, mountains)

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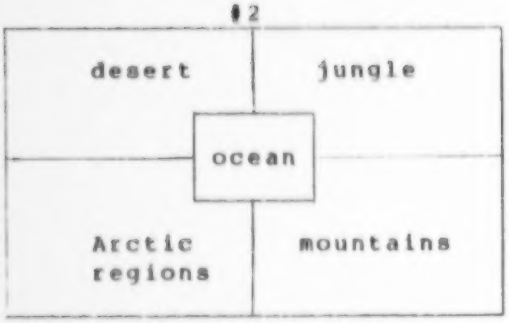
HABITAT GRID

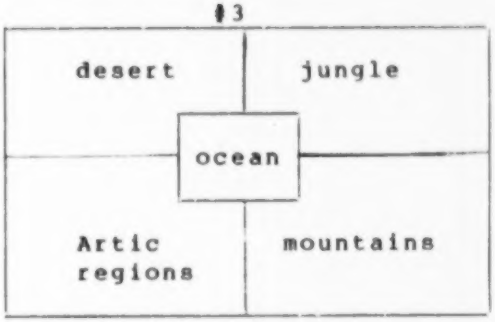
#2



animal _____

habitat _____

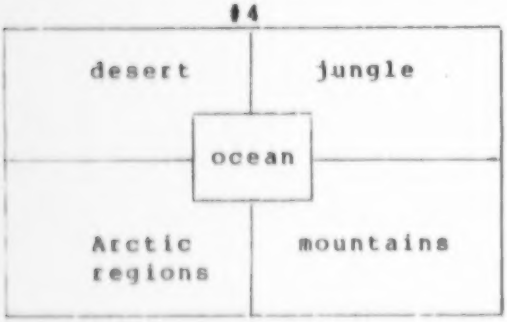
#3



animal _____

habitat _____

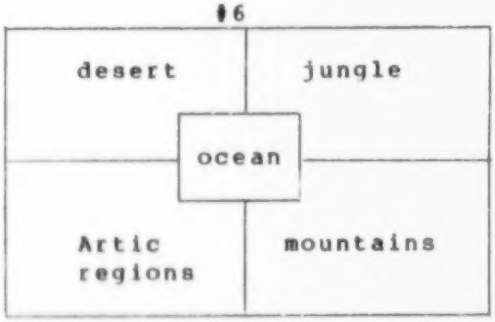
#4



animal _____

habitat _____

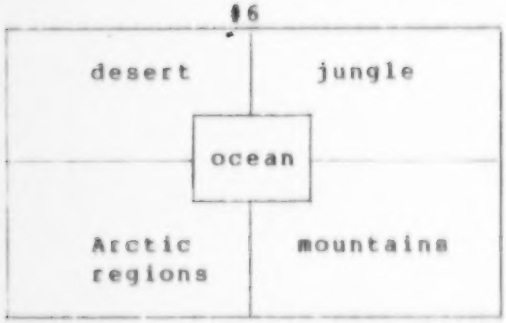
#6



animal _____

habitat _____

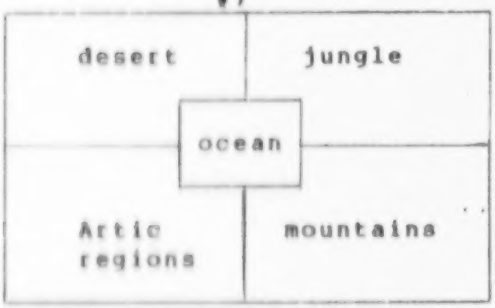
#6



animal _____

habitat _____

#7



animal _____

habitat _____

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Title: THE EENSY WEENSY SPIDER EXPLORES HIS WATERSPOUT--AND BEYOND!

Introduction: Spiders are an animal that many people fear. Yet, spiders are necessary on our planet. They control insect populations in a very safe way. They do not poison the environment the way pesticides do to kill harmful bugs. In many cultures spiders are considered a good luck charm. (See The Christmas Spider and The Cobweb Christmas in Resource Section). The waterspout will be emphasized in this activity and how it affects animal habitats. Where does that water go? Can we be better caretakers of Earth by being careful of what we put in the pathway of the waterspout?

Objectives:

To better appreciate what the good spiders do
To be able to track water from waterspout to animal habitat to ocean

Grade Level: K-3

Time: 45 minutes

Materials: Chalkboard

Procedure:

1. Sing the song "Eensy, Weensy Spider."
2. Discuss the word "waterspout" and other words children don't understand.
3. Talk about the usefulness of spiders using the introduction as information.
4. As, "Where does water go after it goes through the waterspout?" List their ideas on the chalkboard.
5. Go outside and find a waterspout. Point out the gutters on the building. Point out where the water goes next. It probably goes into gutters in the street and then into a storm drainage hole. If possible, walk to a creek and point out where the water from the waterspout then enters the creek. Children could then explore the area searching for animals.

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6. Return to school and talk about the way water flows. Draw the pathway on the chalkboard. Include rivers and the ocean.

7. Talk about how it is good that water goes through this system. Ask if there are some bad things that might go into the sewer system which could hurt the animals they might have discovered at the end of their journey. Chemicals from grass fertilizer go into the system and are harmful to the birds, deer, etc. that need the stream water. If adults pour oil from car changes or paint thinner into this system it goes into the animals' habitats and is harmful to them. A tiny oil spill is created in that habitat. Discuss alternatives to pouring harmful products into the sewer system. The oil can be sent to recycling centers.

Follow-up Questions:

1. Why do we need spiders on our planet?

2. Who can tell where water goes after it flows through the waterspout?

3. Why should we be careful what we put into our gutters?

Evaluation: Did the children have greater respect for spiders after the discussion? Can they sequence the flow of water after it lands on the roof until it goes to the ocean? Do they understand that water going on their rooftop eventually goes into an animal's habitat?

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Title: ONE HUNDRED INCHES OF A GOOD PLANET!

Introduction: Children often see small things that adults gloss over. With this activity young children will explore a small part of our planet and learn that there is life and excitement everywhere. The author, Victor Hugo, once remarked that the scent of the hawthorne surely affects the heavens. Being a caretaker of our planet means celebrating the contributions of every living thing, big or small, black, brown or white.

Objectives:

To discover that there are many tiny creatures and plants to investigate
To understand that all things on our planet are interrelated

Grade Level: K-5

Time: 15 minutes for an introduction in the classroom and 20-30 minutes out-of-doors

Materials: Bug jars (baby food jars)
Small magnifying glasses
Microscope (for classroom use)
Piece of string, 100" long, one for each child

Procedure:

1. Tell the children they will be going outside to find tiny plants and creatures. Ask what they might expect to find. Answers might include ants, beetles, worms, leaves, rocks, grasshoppers, etc.

2. Explain they will each get a piece of string to mark off a "discovery area." Demonstrate how to place the piece of string where there are different ground covers. For example, one end could be placed at the edge of a rocky playground. It could continue to go over a log or brick into a weedy or grassy area. A log or brick or rock would be important to include as there are many small insects that make their habitat under such things. One end of the string could go part way up a treetrunk.

3. The jars are for collecting any interesting specimens they might enjoy examining with their magnifying glasses

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or microscope. Remind the students that these things will need to be returned to their homes as even very tiny plants and animals are important on our planet.

4. Go outside and help students find places to mark for their one hundred inch journey. There will probably be much noise and excitement during this activity. They will want to share their discoveries. Be on hand to demonstrate how to look under the logs and rocks. They will need to get down on hands and knees or stomachs to carefully examine all the wonders that are available. Remember to look at the tree bark for any insects.

5. Remind children to put the insects back in their habitats. If the microscope was kept inside perhaps a few bugs and leaves, could be taken to the classroom for further investigation, but emphasize that they should be returned to their habitats later so that they can continue their jobs on our planet.

6. Give children time to share their discoveries one at a time with the group. Allow students to take home their strings so that they can discover more things in their own backyards.

Follow-up Questions:

1. What were some things you found?

2. Were you surprised to find some of these things?

3. You looked at a tiny part of our planet today. Do you think that ladybugs, rolypolies, beetles, etc. are as important as whales, elephants, and basketball players? Why or why not?

4. If there were no tiny creatures, how might our planet be different? This could lead into a very simple discussion of a food chain. Birds, anteaters, etc. need tiny bugs to eat in order to live. Perhaps a cure for cancer or other disease might one day be discovered through the use of a simple plant or "weed."

Evaluation: Did the children enjoy learning about a whole new world that is beneath their feet? Were they careful to return the bugs to their habitats so that the bugs could continue their work? Was there enough variety in the area you selected to do this activity? Are they beginning to see the interconnectedness of all things on our planet? Each and every living and nonliving thing should be cherished!

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Further Suggestions:

1. Have a discussion about the importance of every person on our planet. If a tiny bug or plant is necessary, then surely every individual is just as special. We need short people and tall people just as we need big and little plants and animals. We delight in red ladybugs, yellow sunflowers, black, shiny dogs and cats, and white snow. Why, then can't we also delight in red, yellow, black, and white skin? Our planet needs them all!

2. Have books in the classroom library to help students learn more about insects and plants.

3. The breakdown of soil is interesting. Have students learn how leaves and twigs are eaten by insects and given back to the earth to make our soil richer.

4. Have the students draw what they find in their 100" circle.

5. Instead of collecting them, use this opportunity to go on a field trip to someplace different which might have different insects and plants and compare the two experiences.

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IV. ENDANGERED HABITATS

Title: THE ENDANGERED JUNGLE

Introduction: Loss of jungle habitat is becoming recognized as one of the biggest problems that touches all mankind. We need the trees to cleanse our air, and we need the plant and animal species for many medical reasons that scientists are only beginning to study. In this activity young children will begin to understand that the loss of a single tree means the loss of a home for animals.

Objectives:

To learn how the loss of habitat means the loss of animal homes
To become aware of the "carrying rate" of our planet

Grade Level: K-3

Time: 20 minutes

Materials: Long rope
Have each student bring a favorite stuffed animal from home. Tell them to bring a jungle animal if they have one.

Procedure:

1. Briefly describe how many jungle animals are in danger of extinction due to habitat loss. Poor people in the jungle cut the trees to provide for their families. The black rhinoceros, elephant, mountain gorillas, cheetah and many other cat species, etc. are endangered.

2. Make a large circle on the floor with the rope. Have each child take his stuffed animal into the circle and find a "safe" place for it to live. In other words, a monkey would not want to live right next to a tiger or a gorilla. Let the children play with their animals for a few minutes by imitating that animal's behavior. A child with a stuffed tiger could have it walk around a little and look for a tasty meal. A child with a stuffed monkey could pretend it was playing in the trees.

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3. Pull the rope at one end to make it slightly smaller. The children will need to be closer. Continue with steps 2 and 3 several times.

Follow-up Questions:

1. Do your animals still feel safe?

2. What seems to be happening to their habitat?

3. The poor people who live by the jungle must feed their children. Can you think of other ways they might be able to feed their families? Note: It has been shown that more money can be made from the tourist industry where people go to view these species in the wild than can be make by harvesting the timber and replanting it for grazing land.

Evaluation: Were the children able to see that animals need a certain amount of habitat to live in successfully? Were they able to appreciate the problems these species have in surviving? Were they sensitive to the problems of the poor people?

Further Suggestions:

1. The jungles are not the only areas were habitat loss threatens wildlife survival. Have the children look out the classroom windows for wildlife. Imagine what the area might have looked like 100 years ago. There might have been buffalo, foxes, wolves, etc. There were probably many more birds than there are now.

2. There are frequently articles in the newspapers about the problem of developers in removing prairie dog colonies and deer problems. Have students brainstorm ways in which we could better live with various species.

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Title: JUNGLE SHOES

Introduction: Many large impressive land animals are in danger of extinction in Africa due to habitat loss and poaching.

Objectives:

To develop an appreciation for the uniqueness and beauty of jungle animals
To learn to listen carefully to different sounds

Grade Level: K-3

Time: 15 minutes

Materials: "Gorillas in the Mix," cassette tape by Bernie Krause, side 1, "Jungle Shoes," RYKO Analogue.

Procedure:

1. Listen to the song, "Jungle Shoes."

2. Ask the children to name the animals they heard. The entire song is made from animal sounds. Animals include shrimp, walrus, whales, coyotes, gorillas, crocodiles, fish, tortoise, and owl, elephants, and sparrows. Ocean waves can also be heard.

3. Assign different groups some of the more obvious sounds. These would include the gorillas, owl, elephants and sparrows. Play the tape a second time and let the groups make their assigned sounds as they hear them on the tape.

Follow-up Questions:

1. What other sounds might you hear while walking through the jungle?

2. How do you think this tape was made?

3. Is it easier to make a tape using human voices and instruments, or animal voices?

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Evaluation: Did the children listen carefully so that they would make their animal sound at the appropriate time on the tape?

Further Suggestions:

1. This would be an excellent tape to listen to while drawing jungle animals.

2. Have students try moving to the music to act out the animals' various gaits.

3. Taking a walk around the block or to an open field close to the school would give the students a chance to listen for animal sounds in the neighborhood. How are these sounds similar to sounds on the tape? How are they different?

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Title: BANANAS OVER BATS!

Introduction: Bats are a much-maligned animal, however, they are necessary to our modern lives. They are our most efficient insecticide, and they are necessary for the pollination of many of our plants. Their guano is an excellent fertilizer used in several countries around the world. Bats are protected in many countries. In the United States only bats which have entered buildings and are creating a nuisance can be destoryed.

Objectives:

To appreciate the good bats do in the world
To increase student's awareness of bats' abilities to pollinate plants and control insect populations

Grade Level: K-3

Time: 20-30 minutes, plus baking time

Materials: Ingredients for the following recipe:

Banana Bread by Katie Metcalf

Cream together:

1/2 C. shortening	2 eggs, unbeaten
1 C. sugar	3 ripe bananas, mashed

Sift together and add to above mixture:

2 C. flour	1/2 tsp. salt
1 tsp. soda	1/2 C. chopped nuts

Grease bottom of small loaf tins. Bake at 325° about 45 minutes, or until toothpick comes out clean. It might be easier to make this in muffin tins with cupcake papers.

Procedure:

1. Briefly discuss what children already know about bats. Some misconceptions will need to be corrected. For example, very few bats are rabid, and bats do not get tangled in hair. If a bat flies close to someone, it is simply to eat a tasty bug!

2. Discuss what animals pollinate plants, thus providing fruit and vegetables for us. Most children will know that a bee can pollinate, but do they know bats and

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butterflies also do this important job on our planet? Bats are the pollinators of bananas!

3. Have children help make the banana bread. This job can be divided in various ways. I have found it is easiest to give each child a section of banana to mash. The teacher can then put the rest of the ingredients together quickly.

4. As the bread is baking, have a discussion on bat habitats, they live in rocks, trees, and caves. The focus here is on cave habitat. Tell the children that many cave entrances have many shell casings on the ground as evidence that people shoot bats as they come out of their cave at night. If people enter bat caves during hibernation, the bats wake up. The tiny bit of energy lost from waking will result in the deaths of many bats. At a park in Kentucky, three boys rampaged through a cave destroying approximately 10,000 bats. These bats could have eaten thousands of insects, saving farmers much money on insecticides.

5. Eat bread and thank a bat!

Follow-up Questions:

1. What are some of the bad things people say about bats? Are they true?

2. Why should you stay away from bat caves and nurseries? Make sure the students understand that bats are very important to our planet.

Evaluation: Did the children seem to appreciate bats more after learning about them? Did they express concern about the plight of bats around the world? Will they be more likely to leave bats alone if they should see one and be content to observe them from afar?

Further Suggestions:

1. The Bumblebee Bat in Thailand is one of the twelve most endangered animals in the world because of limestone mining in their caves. Have students learn more about these tiny bats which weigh only 2 gram but provide an important function in that country.

2. Have students learn about bats in their own part of the planet.

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Title: CARETAKERS OF OTTERS

Introduction: California sea otters were believed to be extinct for many years. In March of 1935 Frieda and Howard Sharpe discovered these animals off the Big Sur coast near Monterey, California. The otter population has increased in recent years, but due to conflicting interests of otters and man their continued existence is still not guaranteed. Young children can begin to think about the moral dilemma of animals and their habitat vs. man and his needs.

Objectives:

To discover that the needs of animals and man are sometimes in conflict
To explore solutions to a problem and appreciate the complexity of the problem

Grade Level: K-3

Time: 20 minutes

Materials: Flannelboard
Handout #8, "Caretakers of Otters"
Handout #9, "Flannelboard Figures"
Chartpaper or chalkboard

Procedure:

1. Read the story from Handout #8 and illustrate it with flannelboard figures from Handout #9.

2. After reading and illustrating the story, have students discuss needs of otters (clean air, water, food, and a safe place to live), and needs of oil drillers and fishermen. List needs of each on chart paper or chalkboard.

3. Discuss solutions to the problem. These could include having the fishermen and oil drillers go elsewhere. The otters could be moved to other beaches or to zoos.

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Follow-up Questions:

1. How might the fishermen and oil drillers feel about having to find other places to work?

2. How might the otters feel about moving to other beaches and zoos?

3. What if fishermen weren't allowed to fish there?

4. And what if oilmen couldn't drill there?

5. Should otters live freely or only live in zoos?

Evaluation: Did the children become more sensitive to the problems of both man and animals? Could they come up with workable solutions? Could they see the good and the bad in their solutions?

Further Suggestions:

1. This story could easily be acted out by the students. Assign students roles as otters, fishermen, and oil drillers and each group could explain why they should be allowed to stay in the area.

2. Have students demonstrate how otters use tools. They could expand this knowledge by investigating other animals which use tools. The November 1977 issue of Ranger Rick, pages 42-47, is an excellent resource for tool-using animals.

3. Have students draw pictures of two otter homes, one living in a zoo and one living in its natural habitat. Have them talk about what is positive and negative about each home.

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CARETAKERS OF OTTERS
by Mary Metcalf

Once upon a time, not so long ago, two people were using a telescope at the beach. Suddenly they saw something wonderful! Ninety-four California sea otters (put up flannelboard otters) were playing and eating in the ocean. Now you might not think this is very exciting, but people thought these animals were extinct! Extinct means all gone. Many people were happy that there were still sea otters.

Sea otters have four short legs, a long neck, a tail, and two small ears. Their beautiful fur looks dark when wet but it is a grayish brown. Sea otters have webbed feet like a duck. This makes them good swimmers.

The fur of otters helps to keep them warm, but they don't have a lot of fat like some animals to keep warm enough in the cold ocean water. They have to eat almost all the time just to stay warm. Otters are very smart when they eat. They use a tool to eat just as we use tools like forks and spoons to eat. Rocks (put up picture) are an otter's tool. The otter will swim to the ocean bottom and pick up a clam (put up picture) then swim to the top. The otter floats on its back, puts the clam on its stomach and uses the rock to hit and break the clam shell. Then the otter eats the clam. Otters also like to eat sea urchins, fish, (put up pictures) snails and other ocean creatures.

Now, we have a problem with otters. Otters live where fishermen (put up picture) like to catch fish. Do you think fishermen like otters? No, they think otters are pests and eat too many fish. And, of course, fishermen need to catch fish so they can make money to feed their children just as your parents work to make money so they can take good care of you.

We have another problem with otters. Otters live where there is oil under the ocean bottom. Oil drillers (put up picture) want to build oil rigs there so that they can sell this oil. They need to make money to take good care of their families. We need their oil to heat our homes and make our cars go. If their oil well gets a leak, oil will cover the beach and water where the otters live. The otters might die.

We don't have an ending to our otter story. We have a problem. Let's talk and see what you think we need to do to be a caretaker to otters and to the fishermen and oil drillers.

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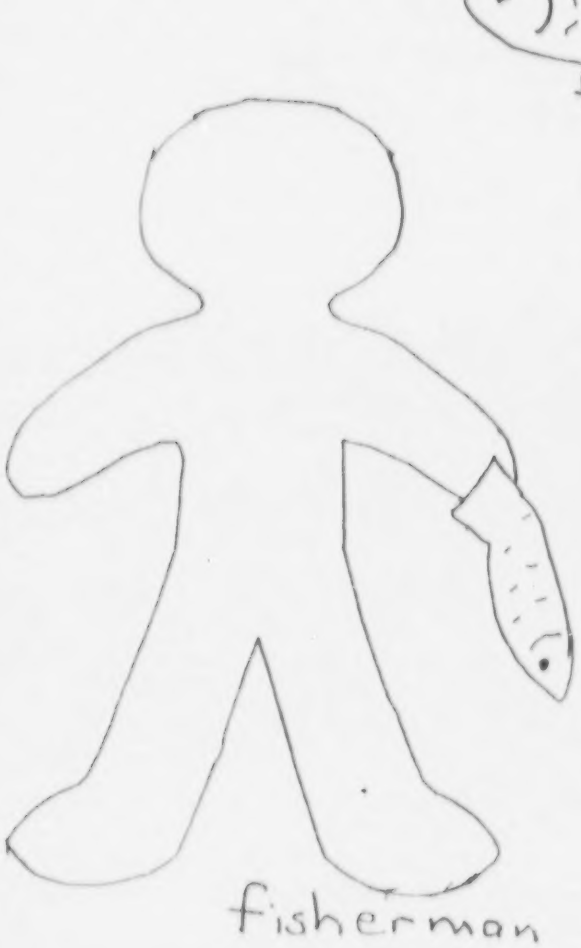
FLANNELBOARD FIGURES



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Title: THINKING ABOUT SEA OTTERS

Introduction: Critical thinking skills are utilized as the students learn about sea otters.

Objective:

To learn about sea otters and their needs

Grade Level: 4-6

Time: One to two weeks

Materials: Handout #10, "A Sea Otter Adventure"
Handout #11, "Vocabulary Matching"
Handout #12, "Bloom's Taxonomy Packet"

Procedure:

1. Distribute Handout #10, "A Sea Otter Adventure," to each student. Read it aloud as a class, taking turns so that every student has a chance to read.

2. Give each student Handout #10 and #11 and explain they are to complete them as homework.

3. Inform the students of the due date.

Follow-up Questions:

1. Rate your knowledge of sea otters on a scale of one to ten before reading "A Sea Otter Adventure" and after. Share one new fact that you learned.

2. Read an answer that you wrote under the category of synthesis or evaluation.

Further Suggestions:

1. Give the descriptions of each level of questioning for Bloom's Taxonomy to the students. Ask them to compose one question for each level for a book they have read.

2. Show a video on otters to reinforce information and so the students can see the otters in action.

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Answer Key:

Vocabulary

I	1.	R	6.	B	11.	C	16.
L	2.	Q	7.	O	12.	T	17.
F	3.	A	8.	K	13.	P	18.
N	4.	J	9.	E	14.	D	19.
M	5.	H	10.	S	15.	G	20.

Knowledge and Comprehension

1. A sea otter will splash and blow water to create bubbles that are then trapped between the longer top coat and the short fur of the undercoat.

2. When a sea otter's fur is covered with oil it doesn't keep them warm so they may freeze to death. The fumes of the oil and the possibility of swallowing it when eating or grooming can poison an otter as well.

3. Sea otters live off the coast of the United States and several republics of the Commonwealth of Independent States.

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A SEA OTTER ADVENTURE
by Diane Simmons

Julia awoke slowly and watched the sun streaming through the windows. It was going to be a beautiful day. Thinking about the day's proposed activity she became excited and could stay in bed no longer.

Downstairs she found her aunt sipping orange juice and reading the morning paper. Julia smiled, Barbara was her favorite aunt. Julia had been thrilled to be invited for a vacation at her seaside home in California.

"Good morning, are you ready for today? The weather looks great!" greeted Barbara.

Julia agreed. As many times as she had been to her aunt's house, today she was embarking on a new adventure. She was going on a tour that would be looking for sea otters.

After breakfast Barbara drove Julia to the harbor to board her boat. The wind was blowing ever so slightly and she could smell the salt in the air. Her excitement was mounting by the moment. She kissed her aunt, said good-bye and climbed aboard.

It wasn't a large vessel but Julia thought that it would be less obvious to the otters and she quickly chose a seat by the window.

As the boat pulled away from the shore the tour guide began to speak about sea otters.

"There are numerous reasons why an animal may face extinction. In the early eighteenth and nineteenth centuries the sea otter's fur was more valuable than that of beavers or bison. It wasn't until 1911 that several nations made an agreement to stop the hunting of sea otters. At that time there were fewer than fifty known sea otters left along the California coast. At one point, sea otters were even thought to be extinct."

Wow! thought Julia. I didn't know otters were hunted for their fur. I do remember that the fur of a sea otter is unique, however. It keeps the otter very warm in the cold water and is virtually waterproof. There are two layers of fur. A sea otter will splash and blow water to create

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bubbles that are then trapped between the longer top coat and the short fur of the undercoat.

Julia squinted in the sun. Soon the boat would be getting close to the seaweed or kelp beds where the sea otters live.

The tour guide continued. "Although we are on the coast of California, the sea otters' range is much greater. They make their homes along the North Pacific coast from central California to Alaska and on over to Siberia."

Ahead was a good location for observing otters so the boat turned off its engine and began to drift. Julia got out her binoculars. In the distance she could see an oil tanker cruising by.

"Look!" someone whispered. A small brown-grey head had just popped out of the water. My first sea otter Julia thought. It turned on its back and began to swim slowly with its hind feet which were webbed. The otter was observing the boat and kept an eye on it, but seemed to relax a little.

Suddenly it disappeared, only to reappear a short time later with a small clam and a rock. Julia looked at the brochure she received when boarding the boat. Sea otters have a high metabolism and must eat constantly. An otter will eat ten to fifteen pounds of food a day consisting of shellfish, sea urchins, abalone, and crabs, she read.

Crack, crack - Julia's attention was brought back to the sea otter. It was using the rock as a tool to open the shell of the clam. When it was finished, on its belly was the smashed shell. Retaining the rock, the otter once again dove down for another meal.

"A sea otter is a mammal," the person next to her said quietly. "Otters will dive for their food, but they must breathe air so they bring their catch back up to the surface to eat."

Julia looked back to the water. By this time the original otter had been joined by several others. Most were eating but Julia noticed one in particular that was splashing the water. He must be grooming she realized. He's staying warm and also helping himself to float.

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"The otters are bigger than I expected," Julia whispered over her shoulder.

"Actually, sea otters are the largest member of the weasel family. A male sea otter can weigh sixty-two pounds and measure over four feet long including its tail," came the response.

For the first time Julia really looked at the person sitting next to her. He was a little older than herself and had a friendly face.

"How do you know so much about otters?" Julia asked.

"I'm a student at the University and in my marine biology class we are studying California sea otters," he replied.

"They sure are facinating," she said. "I can understand your interest. My name is Julia."

"Pleased to meet you Julia, I'm Sam."

It was time for the boat to return and when the engines started all of the sea otters were instantly gone. Good-bye until another time Julia thought a little sadly.

Once again she noticed the oil tanker and commented on it to Sam.

"Yes," he said, "sea otters can be harmed by the chemicals and waste people dump in the water and they were threatened by fishermen who were competing with the otters for seafood. Luckily, in the early 1970s new laws were passed requiring the fishermen to use their fishing nets in places where sea otters aren't located. As a result, the lives of many otters have been saved.

"However, that oil tanker with the potential for an oil spill poses the greatest danger of all for sea otters. When their fur is covered with oil it doesn't keep them warm so they may freeze to death. The fumes of the oil and the possibility of swallowing it when eating or grooming can poison an otter as well.

"To help prevent an oil spill that could wipe out the entire population of sea otters off the coast of California, tankers are required to travel many miles off of the coast and oil drilling must be done outside of otters' range.

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"As another safeguard, the U.S. Fish and Wildlife Service is trying to set up a second colony of sea otters away from the mainland of California. Although some sea otters have been discovered swimming the almost two hundred miles back to the original site, we are hopeful that most will stay and make it their new home," Sam remarked.

"You've really motivated me to learn more about sea otters and to do what I can to help protect them!" Julia exclaimed. "As a matter of fact, I just graduated from high school and I have been unsure about where to go to college and what to study. Would you have time to show me around your University? I'd also really like to learn more about your Marine Biology classes."

Sam said he'd be happy to help her. They exchanged phone numbers and made plans before saying good-bye at the dock.

Julia saw her Aunt Barbara waiting by the car. She ran up and gave her a big hug.

Barbara laughed, "Either you really missed me or you had a great time on your sea otter tour!"

"I am glad to see you and I had the most enlightening day," Julia exclaimed. She proceeded to share the day's events with her aunt. "I gained a friendship and possibly a future in which I can research and protect sea otters. I'd like to help keep them from becoming endangered again," Julia said.

Barbara smiled. "It was a good day for you and the otters as well!" she replied.

As they got into the car Barbara asked Julia what she'd like to eat for dinner.

"Let's have seafood," she decided, "I'm not sure why, but I've been hungry for clams all day long!"

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VOCABULARY MATCHING

_____	1. embark(ing)	A. An optical instrument for both eyes, used to magnify distant objects.
_____	2. propose(d)	B. Any of a class of warm blooded animals with backbones, the females of which have mammary glands.
_____	3. vessel	C. Something that protects.
_____	4. numerous	D. To give knowledge or wisdom to.
_____	5. extinction	E. A brief statement or remark that explains, describes or criticizes.
_____	6. unique	F. A ship or boat.
_____	7. virtually	G. To put in danger; lay open to harm.
_____	8. binocular(s)	H. To keep or hold.
_____	9. brochure	I. To begin or set out.
_____	10. retain(ing)	J. A small pamphlet; booklet.
_____	11. mammal	K. Without delay; at once.
_____	12. facinating	L. To intend; plan.
_____	13. instantly	M. Putting an end to or wiping out.
_____	14. comment(ed)	N. Very many.
_____	15. potential	O. Very interesting or captivating.
_____	16. safeguard	P. To do a favor or service.
_____	17. motivate(d)	Q. In almost every way; practically.
_____	18. oblige	R. Highly unusual, rare, or noteworthy; remarkable.
_____	19. enlighten(ing)	S. Capable of being or becoming.
_____	20. endanger(ed)	T. Move to effort or action.

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BLOOM'S TAXONOMY PACKET

State the answers in complete sentences.

Knowledge and Comprehension

1. How do sea otters keep themselves warm?
2. Explain why an oil spill can be fatal to a sea otter.
3. Identify two countries where you can find sea otters living off of the coast.

Application

4. Illustrate your favorite part of the book. Cut it into puzzle pieces and exchange puzzles with your classmates.

Analysis (choose one)

5. Ask ten people outside of your class the following questions and record their responses on a bar graph.
   A. Are sea otters mammals? yes or no
   B. Have sea otters ever been close to extinction? yes or no
   C. Do sea otters live on land or in the water?
   D. Is a sea otter related to a weasel or a beaver?
   E. Which one of the following could be life threatening for sea otters? cold water, oil spills, whales or seaweed
6. Compare and contrast sea otters to river otters. Write two ways in which they are similar and two ways they are different.

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Synthesis (choose one)

7. Write a poem about sea otters.

8. How would the story have changed if Julia had not met Sam? Write a new ending that excludes the character of Sam.

Evaluation (choose one)

9. Do you think sea otters should be kept in captivity, in a zoo for example? Defend your point of view.

10. Write a letter to the editor of a newspaper explaining why you think it is necessary to build a rescue center for sea otters and other animals in the event of an oil spill. Use facts to support your position.

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Title: CARETAKERS OF POLAR BEARS

Introduction: Several years ago polar bears were in danger of extinction. The former Soviet Union ended all hunting of polar bears in 1955 and now takes these bears only for circuses, zoos, and various forms of public display. Other countries have followed suit and now hunting of polar bears is carefully controlled in the five nations where these animals live.

Objectives:

To recognize polar bear habitats
To discover the need for cooperation in caring for polar bears

Grade Level: K-3

Time: 30-40 minutes

Materials: Globe
Any objects or furniture that can be used in the maze should be utilized. A long, low shelf could be an iceberg, hula hoops could be seal breathing holes, oil pipes could be constructed of cardboard wrapping paper tubes placed on chairs where polar bears would need to crawl low, and sheets of white plastic could be hung over tables to be a blinding snowstorm.

Procedure:

1. Locate the Arctic region on a globe and point out the five nations that cooperate in polar bear care. These include the Commonwealth of Independent States, Denmark, Norway, Canada, and the United States (Alaska).

2. Let the children "map out" the room in this manner. Set the stage by having them close their eyes and picture a cold, white place. Are there breaks in the ice where the bears will swim? Where are the seal breathing holes where polar bears can find food? Where are oil pipes that might confuse polar bears?

3. Place the props around the room to represent the Arctic regions.

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4. Select five children to hold hands in a circle to be the cooperating nations. Choose three children to be hunters: one will hunt on a snowmobile, one in a high-powered boat, and one in an airplane. These children can make the engine noise of their vehicles as they "hunt." The other children can all be polar bears and can wander around the room investigating seal holes, pipe lines, and icebergs.

5. As polar bears wander, have one hunter at a time stalk the bears. When the hunter gets close to a bear the five children representing cooperating nations continue to hold hands and move toward the hunter. They gently put the hunter in the middle of the circle and tell the child, "No polar bear hunting allowed." The activity ends with the capture of the last hunter.

Follow-up Questions:

Ask the cooperating nations group:

1. Did you feel you were protecting the bears?

2. Ask the bears if they felt protected?

3. Ask whether or not they think it is fair to use snowmobiles, airplanes and power boats to hunt these animals?

Evaluation: Did the students seem to understand the concept of cooperation between nations? Did each group appropriately act out their various roles?

Further Suggestions:

1. Discuss how the polar bear's white coat is excellent camouflage and how this helps the bear find food.

2. Younger children would enjoy taking a piece of black construction paper and painting it completely white as if there is a whiteout. They could leave a few tiny black spots for polar bear eyes and noses.

3. A polar bear pattern could be given to the students to cut out and paste on the whiteout paper to show how polar bears are camouflaged from seals.

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Title: POLAR BEAR PROTECTORS

Introduction: This game is designed to show how cooperating nations can protect the polar bears.

Objective:

To discover the need for cooperation to enforce laws protecting polar bears

Grade Level: 4-6

Time: 45-60 minutes

Materials: Globe or world map
Handout #13, "Polar Bear Grid," cut into squares
Five signs, labeled Commonwealth of Independent States, United States, Norway, Denmark, or Canada
String for signs

Procedure:

1. To begin the lesson, explain that several years ago polar bears were in danger of extinction. The former Soviet Union ended all hunting of polar bears in 1955 and now takes these bears only for circuses, zoos, and various forms of public display. Other countries have followed suit and now the hunting of polar bears is carefully controlled in the five nations where these animals live.

2. Locate the Arctic region on a globe or world map and point out the five countries that cooperate in polar bear care. These include the Commonwealth of Independent States, Denmark, Norway, Canada, and the United States (Alaska).

3. Move the desks against the wall, or go to another room with open space.

4. Give directions for the game. Each student will choose a piece of paper with the word polar bear, hunter, or the name of a country on it. No one should know the identity of the polar bears and hunters to make the game more fun.

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5. Regardless of what role they play, the students all have important jobs. Explain their duties.

   Nations - Put the sign with the name of your country around your neck. Stand together on the side of the room and watch for someone tapping on another's hip. If you see a hunter, huddle with your fellow nations and watch for another offense. If all five countries see the crime the hunter must sit down. Hint: If at first it is difficult to spot the hunters, watch when a bear sits down who was standing near them.

   Bears - Walk around and watch for hunters. If you spot one try to avoid them. There is no talking or gesturing allowed. If you are tapped on the hip count to five and sit down.

   Hunters - Move through the classroom and try to avoid being caught. Tap the hip of a polar bear. If the nations identify you, you must sit down.

6. Repeat the game several times to allow the student to assume different roles.

Follow-up Questions:

1. Do you think the five nations would have been as successful in identifying the hunters if they would have worked alone? Why or why not?

2. What other benefits could result as Norway, Denmark, the United States, Commonwealth of Independent States, and Canada cooperate to save the bears?

3. The United Nations serves many purposes for the countries involved including increased communication. Do you think the polar bear situation would be the same if such an organization didn't exist? Why or why not?

Further Suggestions:

1. Use this game as an inside recess activity. It is fun and will further reinforce the concept.

2. The students may want to research the formation of other organizations to help endangered animals.

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POLAR BEAR GRID

HUNTER	HUNTER	HUNTER	POLAR BEAR	POLAR BEAR
POLAR BEAR	POLAR BEAR	POLAR BEAR	POLAR BEAR	POLAR BEAR
POLAR BEAR	POLAR BEAR	POLAR BEAR	POLAR BEAR	POLAR BEAR
POLAR BEAR	POLAR BEAR	POLAR BEAR	POLAR BEAR	POLAR BEAR
POLAR BEAR	POLAR BEAR	POLAR BEAR	POLAR BEAR	POLAR BEAR

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Title: WHAT HAS SIX FINGERS ON ONE HAND?

Introduction: The Giant Panda lives on mountain slopes in China. Due to the population growth, much of the panda's habitat has been destroyed to make room for more fields to feed people. The pandas in the zoo in Washington, D.C., have touched the hearts of many Americans. Yet we have only two pandas and can't seem to produce offspring. This animal is endangered and even with zoo support seems to be in rapid decline.

Objective:

To recognize that there should be a place for all animals to live on our planet

Grade Level: K-3

Time: 15 minutes

Materials: The Panda, by Nadine Saunier (listed in Resource Section)

Procedure:

1. Read the book The Panda.
2. Briefly discuss the pandas' habitat. As they only eat bamboo they can only live in bamboo forests or zoos. These lands are being cleared for farmers to grow people food.
3. Read the following finger play, and have the children learn appropriate hand motions and the words to the poem.

I'm a little panda bear with white and black, black hair.

I live in a bamboo forest and take my nap in trees.

On each paw I have two thumbs,

To help me peel my bamboo food.

And when I'm feeling full and happy,

This is what I hum,

"Keng...keng...keng!"

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Follow-up Questions:

1. Can you think of ways the farmers might be able to leave the bamboo forests alone?

2. Have any of you seen a panda?

3. What did you think of these animals?

4. Do you think the animals like being in a zoo or would they rather be in their forests?

Evaluation: Did the children become more aware of the plight of giant pandas and of the farmers needing to produce more food? Did they have fun discovering that pandas have six fingers on each paw rather than just five like people?

Further Suggestions:

1. Have the children locate China on a globe.

2. Have students make small pandas out of clay and paint them to look like real pandas.

3. If any child has a stuffed animal panda at home (s)he could bring it to the classroom. Create two habitats for the panda, a zoo out of a box with bars across the front, and a bamboo forest with trees glued onto a coffee can to stand. The children could play with the stuffed animal and the two different habitats if there is a center time in the class schedule.

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Title: RESEARCH PROJECT: ENDANGERED ANIMALS

Introduction: In this activity the students will expand their knowledge of endangered animals by doing research.

Objectives:

To learn about an endangered animal and share that knowledge
To use a variety of resources in the library

Grade Level: 4-6

Time: Two class periods (60 minutes each)

Materials: Overhead
Handout #14, "Worksheet"
Library resources
Art supplies

Procedure:

1. Introduce the lesson by showing the students a transparency of the list of animals found at the end of this lesson.

2. Ask if they know what all the animals have in common. If not, explain that they are all endangered.

3. Assign or have each student choose an animal to research from the list at the end of this lesson.

4. Distribute Handout #14 and give directions. Instruct the students to complete the handout at the library.

5. Go to the library as a class. Plan to spend 45-60 minutes there.

6. When the students have finished the written work, they need to portray their animal for the class to see. They may use clay, a photograph, a drawing, make a collage or whatever they desire.

7. Have each child present their animal to the class and tell about it.

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Follow-up Questions:

1. Was there a lot of information about your endangered animal? Why or why not?

2. What do the animals have in common? How are they different?

3. Why are the animals becoming endangered or extinct?

4. What can you do to help these animals?

Further Suggestions:

1. The research activity can be used with a variety of subject matters and topics.

2. Visit a zoo and locate the endangered animals there.

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Giant Panda
Asian Elephant
Black Rhinoceros
Mountain Gorilla
Blue Whale
Whooping Crane
Siberian Tiger
Southern Bald Eagle
Orangutan
Polar Bear
Gray Wolf
Atlantic Loggerhead Turtle
Jaguar
Cape Mountain Zebra
Barbary Hyena
Western Chimpanzee
Walla Ibex
Pygmy Hippopotamus
Giant Sable Antelope
Black-faced Impala
Giant Golden Mole
Drill
Crowned Lemur
Serpent Eagle
Everglade Kite

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WORKSHEET

1. List five facts that you think you already know about your animal.

   1. _____
   2. _____
   3. _____
   4. _____
   5. _____

2. What are three resources where you could find information? Use at least two.

   1. _____
   2. _____
   3. _____

3. List five new facts that you discovered about your animal.

   1. _____
   2. _____
   3. _____
   4. _____
   5. _____

4. Why is your animal endangered?

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5. Which two different sources did you use to do research?

1. _____

2. _____

Using your research and previous knowledge, write a paragraph about your animal to present orally to the class.

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V. COOPERATION IN A HABITAT

Title: GOING ABOUT A BEE'S BUSINESS

Introduction: For this section of the curriculum there will be an emphasis on cooperation. To maintain a hive there must be a unity of effort from all bees. Children will learn about the various jobs in a bee hive. This information can be expanded when talking about classroom, family, and community efforts.

Objectives:

To learn about various jobs that bees do
To compare and contrast this knowledge to ideas of cooperation in school, family, and community

Grade Level: K-5

Time: 30 minutes

Materials: One sign labelled "Queen"
Signs labelled "House Bee," "Nurse," "Wax Maker," "Guard," and "Forager" (have enough so each child in class has a sign
Something that can be representative of bee eggs such as plastic Easter eggs or L'eggs nylon containers
Container to hold eggs

Procedure:

1. Describe the jobs of six types of bees. The main bee is called the queen. Her job is to lay eggs to keep producing workers for the hive. A second type of bee is called the house bee because it cleans cells for new eggs and removes dead bodies of bees and any invading insects. Nurse bees feed the larvae royal jelly. Wax makers, the fourth type, build the honeycomb by chewing wax they produce and forming it into six-sided cells. Guard bees protect entrances to hives. The last type of bee is called the field or forage bee which is the bee we see in our gardens busily gathering pollen to produce food for fellow workers.

2. Distribute signs to students so each one has a role. Remember, there can only be one queen.

3. Have the Queen take one egg at a time carefully out of a bucket to represent laying eggs. The child could say,

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"Here are eggs for baby bees," or a loud buzz sound, etc. House Bees could pick up any paper scraps, dirt, or rocks on the floor and say something like, "We like our hive clean so our honey tastes delicious." Have the "Nurses" decide on a motion such as putting eggs in cartons to show how they take care of the eggs. They could make a quiet humming sound, or whatever they choose. The Wax Makers could chew on some candy that is made of wax or chew gum and they could make a chewing sound. The guard bees could make angry buzzing sound, say "Stop!," or whatever they think appropriate. Finally children wearing the "Forager" signs can busily go about the room looking for "flowers" to gather pollen to take back to the hive.

4. Let all "bees" do their jobs for a few minutes. Remind them that only foragers can go far from the hive.

5. Call all children back to the group and talk about the importance of each job in a bee community.

Follow-up Questions:

1. What job is most important in a bee community? Hopefully the children will recognize that all are equally important to the welfare of the community.

2. Can jobs in our school, home, and community be like the jobs of bees? No one bee can do all the work, just as no one teacher, parent, policeman, fireman, etc. can do all the jobs that schools, homes, and communities need to have done. We must cooperate!

Evaluation: Did all children understand their jobs by successfully performing motions and sounds that were appropriate? In the discussion did they demonstrate an understanding of the importance of cooperation for both bees and people?

Further Suggestions:

1. Bees can be made from empty toilet paper rolls by either coloring or gluing on strips of yellow and black construction paper. Eyes made by using a hole punch on black paper and glued onto the bee body and feelers from black construction paper or pipe cleaners complete the bee.

2. Students would enjoy a snack of bread and honey following the activity.

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Title: A TINY HABITAT AND COOPERATING ANTS

Introduction: Our world has grown extremely complex. Many environmental problems do not affect only the creating countries. Acid rain, deforestation, pollution of the oceans, etc. causes world-wide problems. In this lesson young children will begin to examine the tiny world of ants and learn how they must cooperate to ensure their survival. World problems are too complex for the students to comprehend, but this lesson will set the stage for the complex issues they will need to face during their lifetimes.

Objectives:

To observe a world of ants in miniature
To learn the importance of cooperation in the lives of these tiny insects

Grade Level: K-5

Time: 30 minutes

Materials: Glass jar covered with black construction paper (one per student)
Stick with a tiny bit of honey on the end
Dirt

Procedure:

1. Describe the various jobs of ants and how each ant must fulfill his duties for the good of the community. The queen ant produces all the eggs for the colony. Drones or male ants have wings and help fertilize the queen's eggs to make more workers, then they die. The worker ants are all female. Some workers clean the nest and make the nest larger. Other workers lick the eggs to keep them clean and fed. They are called nursery workers. Some ants are called scavengers which kill for food. Other workers visit flowers for nectar. Some special ants are called harvester ants, and they collect and store seeds. Some types of ants have workers called soldier ants which guard the entrances to the nest.

2. Discuss where ants live. Some live in hollow trees. Other habitats include nests, mounds of grass, hollow stems, and of course, many live under ground.

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3. Tell the children they will each make their own ant farm. They will all go outside and fill their jars with dirt. Next they will find ants. One easy way to capture ants is to place a stick with honey covering one end on the ground close to ant holes. In a few minutes there will be many ants feeding from the stick. Simply place the stick in the jar, add a few leaves and a few drops of water, and screw the lid on tight.

4. After each child has competed his ant farm return to the classroom and put the jars on a low accessible shelf. Have children place a piece of black construction paper on top of the jar in place of the lid. Tell the children that their ants are already busy making their new homes, but that they should not be disturbed too often. Once a day the children can carefully lift the construction paper off their jars to see what has developed. Within a few days their jars should contain many tunnels readily observable to the children. Emphasize that the ants must work together to make their new home. One ant working alone could not possibly create all the rooms and tunnels necessary for ant life. Caution the children to hold their jars carefully. Everytime the tunnels are disturbed the ants will need to repair them.

5. Ants help to clean our planet of dead insect bodies; therefore, the ants should be returned to their natural habitats after a few days of examination.

Follow-up Questions:

1. What would happen to an ant community if there were no queen, drone, worker, harvester, or soldier ant in the nest?

2. What types of workers do we need in our community to keep it running smoothly?

3. Do you know of things we use from other parts of the world that help us with our lives? Help children become aware of the many things we get from other places such as food, clothing, toys, etc. that make our lives nicer.

Evaluation: Do the children seem to appreciate all the jobs ants must perform to live? Can they transfer this to their own lives? Do they seem to be developing an appreciation for the need to cooperate with others in our world?

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Further Suggestions:

1. Read books about ants, or have them available. Children could begin to learn about the three parts of an insect's body, such as head, thorax, and abdomen.

2. Draw pictures of the ant farms, showing the many tunnels. Remind students to include all the different types of ants in their pictures.

3. Rather than creating individual ant farms, create a large classroom ant farm, or other type of habitat such as an aquarium or a desert habitat housing lizards. Hermit crabs make excellent classroom pets as they are clean and easy to maintain. More ambitious habitats could include a home for gerbils, hamsters, guinea pigs, rats, or rabbits to allow children first-hand observation of animals.

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Title: COME PLAY IN MY BACK YARD!

Introduction: In "A Tiny Habitat and Cooperating Ants" and "Going About A Bee's Business" the students have observed cooperation in the animal world by learning about bees and ants. Now it is time for them to learn about the importance of cooperation in their own habitat. In this activity students will pretend to be in their own backyards with fences around them. The fences can be opened with gates! Could that open gate lead to something exciting? The yards represent states/countries and the fences represent boundaries.

Objectives:

To explain how fences can be useful
To recognize that letting other people in to our lives might be exciting and beneficial to all

Grade Level: K-3

Time: 15-20 minutes

Materials: Rope or chairs to "fence" the classroom
Have each student bring a toy from home, or find toys in the classroom to hold during this activity

Procedure:

1. Set up classroom ahead of time so each student has a "yard."

2. Explain to the children that they will each have their own yard. The students should go and sit in their yards holding their toys. Allow the children to play quietly with their toys for a few minutes.

3. Ask the children if they are having fun. Ask: Is there a way you could have even more fun? Are there any toys with which you would rather play? Help children change toys. They should remain in their own "yards" while the teacher makes a toy change for every student. Again, allow the children to play with their "new" toys a few minutes.

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4. Again ask: Are you having fun? Is there something you might want to try that would be more fun? When a child realizes that letting another child into his/her "yard" would mean that two children could then share two toys, allow them to try it. For very young children the teacher would need to pair up the children. This activity could continue by letting more children play together. They might discover that having too many children in the yard begins to cause problems as there isn't enough room to enjoy the toys or each other.

Follow-up Questions:

1. Was it more fun to play alone or with friends? Some children might enjoy being alone more, and this is fine. However, you might want to remind them that they can play with more toys if they at least share them!

2. What if all the fences were taken down?

3. Why do we have fences on our playground?

4. Why do we need fences on farms and zoos?

Evaluation: Were the children able to think of opening a "gate" in their fences? Could they begin to understand how some fences or boundaries are needed in our world?

Further Suggestions:

Children might enjoy finding out where various toys are manufactured. Parts for some toys are manufactured in more than one country. For example, Transformers are made in both China and Hong Kong. Playskool manufactuers toys in Macau and Taiwan, Lincoln logs are made in the United States. Barbie and her many wardrobes are made in Malaysia, China, Hong Kong, Thailand, and Macau. G.I. Joe and his equipment is made in Mexico, China, Brazil, and Hong Kong. Cabbage Patch dolls are made in the U.S., with help from China. Barrel of Monkeys, Etch-a-Sketch, Crayola products, Play-Doh, Colorforms, and Slinky Dinks are made in the United States. Legos are manufactured in the U.S., Denmark, and Switzerland.

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Title: THE DISAPPEARING RAINFOREST

Introduction: This activity is designed to give the students an overview of the tropical rainforest and its peril.

Objective:

To become aware of the rainforest

Grade Level: 4-6

Time: One hour

Materials: White tag board
Green paper
Rubber cement
Markers
Yellow paper
Double stick tape
The Great Kapok Tree by Lynn Cherry (See Resource Section)
Handout #15, "Benefits of the Rainforest"
Handout #16, "Map of Rainforests"
Handout #17, "Answers and Questions"

Procedures:

1. In preparation for the lesson, the teacher must first make the puzzle. Attach the green paper to one side of the tag board with rubber cement.

2. Using the diagram at the end of this activity as a guide, on the other side of the white tag board, use a brown marker to color in a straight horizon.

3. Label the green paper with the names of the animals, then cut into ten squares.

4. Make three triangles to size with the yellow paper. Write emergents, canopy, or understory (respectively) on each.

5. Using double stick tape, mount the green puzzle pieces on the chalkboard and put the yellow triangles next to them (as indicated on diagram).

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6. Introduce the lesson by reading The Great Kapok Tree to the class.

7. Show the puzzle to the students and briefly explain. Read the book again. Each time after a character has given the consequences of cutting down the tree, take the corresponding puzzle piece and turn it over. This will illustrate the before and after effects of cutting down the Kapok tree.

8. When the book is complete, tell the students that the purpose of the puzzle was to show how interrelated and interdependent the rainforest is. Cutting down even one tree has a tremendous effect on the forest.

9. Distribute Handout #15, the "Benefits of the Rainforest," to the students. Read and discuss each item.

10. Next, using the handout, have the student think of the consequences for each of the items should the rainforest be destroyed. Write the number of the benefits on the chalkboard and then the consequences the students generate next to it.

11 Ask the students if they know any reasons why the tropical rainforest is being destroyed. The three main reasons include:

logging which eliminates the forest so hardwoods can be exported for profit

farming which uses up the nutrients of the soil and aren't replenished, so the farmers move on to cut down more rainforest to cultivate further

cattle ranching which clears the forest for livestock so beef can also be exported

12. Give each of the students a copy of Handout #16 and talk further about the implications of the map.

13. It will probably be obvious to the students that a big problem exists. A natural response might be to ask what can be done to stop the destruction. To help answer this question distribute Handout #17. Listed at the top are suggested ways people can help save the tropical rainforest.

14. Explain the assignment to the students which is on the remaining part of the handout.

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Follow-up: After the students have finished the assignment read aloud the questions and ask for volunteers to share their answers.

Further Suggestions:

1. Take a trip to the zoo and locate animals that live in the rainforest.

2. Have the students compile a bibliography of books for further reading about the tropical rainforest.

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Puzzle Example:

Front of the Tagboard

(green paper)

EMERGENTS	TOUCAN	MACAW	COCK OF THE ROCK	
CANOPY	THREE TOED SLOTH	BOA CONSTRICTOR		
	MONKEYS	TREE PORCUPINES		
UNDERSTORY	BEE	JAGUAR		CHILD
	TREE FROG	ANTEATERS		

Back of the Tagboard

(white tagboard)

(brown marker)

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BENEFITS OF THE RAINFOREST

1. The rainforest acts like a sponge and soaks up rainfall. Then it slowly and steadily releases it into rivers.

2. The rainforest protects topsoil.

3. The rainforest provides food and materials for houses, furniture, clothing, and cars.

4. The rainforest regulates climate both regionally and globally.

5. The rainforest has tropical plants which are the basis for many medicines, industrial products, resins, flavorings and dyes.

6. The rainforest is a home for many animals. New species are being discovered all the time.

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Handout #16

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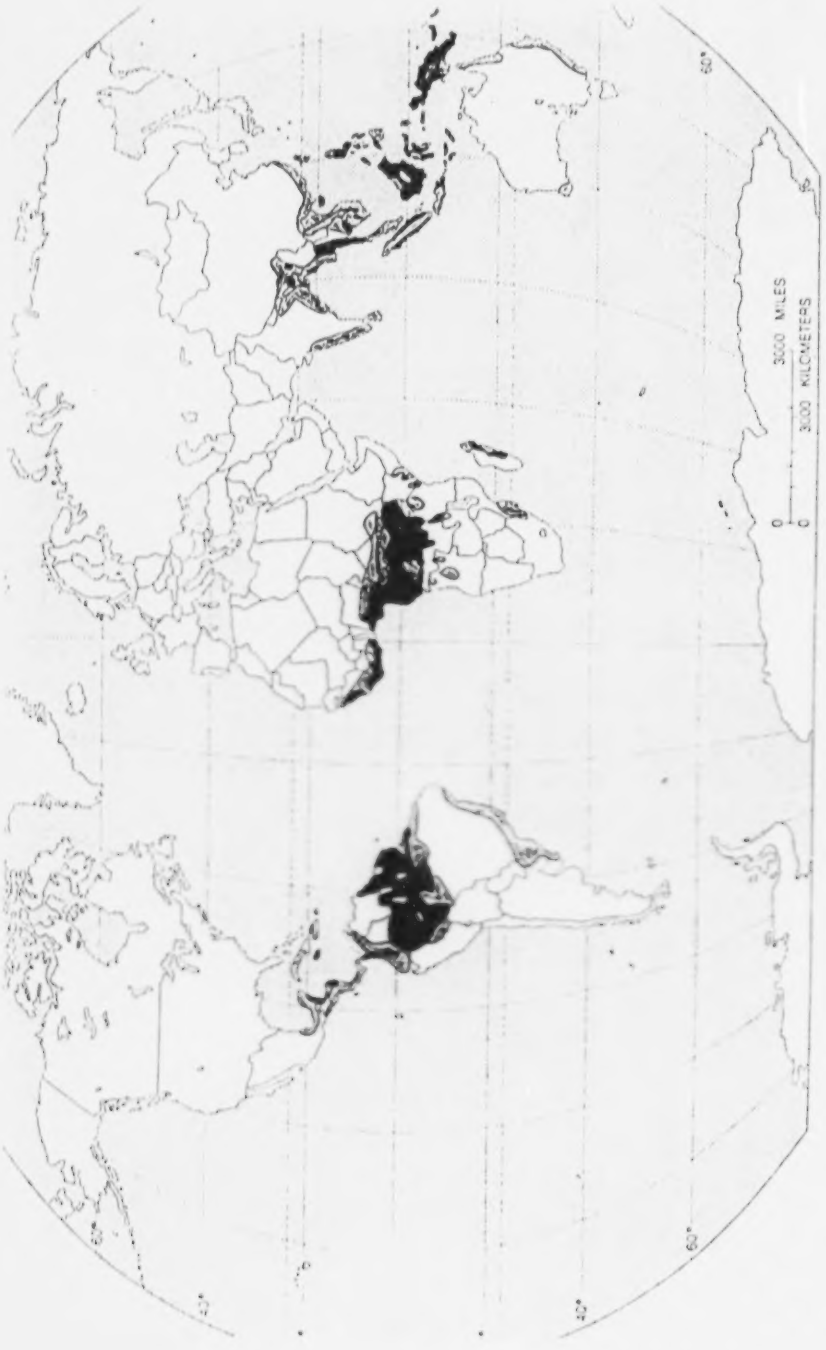
MAP OF RAINFORESTS



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ANSWERS

What we can do to help save the tropical rainforests from further destruction:

1. Do not buy products that are made from imported hardwoods such as teak, mahogany, rosewood, purpleheart, and ramin.

2. Write letters to government officials requesting information and stating your protest.

3. Write to the World Bank demanding the use of funds for development be stopped if it could destroy the rainforest.

4. Avoid eating processed beef products whose beef might be imported from cattle ranchers who clear the rainforest for grazing. (For example: some fast food hamburgers.)

5. Support businesses that encourage use of the rainforest in such a way that it is not destroyed. (Example: Ben & Jerry's Ice Cream.)

6. Buy an acre of rainforest to help preserve it. In the mountains of Costa Rica there is a place called Bosque Eterno de los Ninos (the Children's Eternal Forest). Children raise money ($100.00 per acre) to help in the maintenance and preservation of the forest.

7. Inform other people about the plight of the tropical rainforest.

QUESTIONS

Using all the resources available to you (handouts, information on the chalkboard and The Great Kapok Tree) complete the following assignment on a separate piece of paper.

1. Who was your favorite character in "The Great Kapok Tree" and why?

2. List two benefits of the rainforest and two consequences should it be destroyed.

3. What is one reason why the rainforest is being cleared?

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4. According to the map, which continent has lost virtually all of its rainforests?

5. Which continent has the biggest area of tropical rainforests?

6. Name two of the suggested ways that people can help the plight of the rainforests.

7. Which solution listed do you think is the best and why?

8. Knowing what you do about tropical rainforests now, will you do anything differently? If no, why not and if yes, what?

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VI: EMPOWERING YOUTH

Title: JEWELS IN THE SKY

Introduction: Butterflies and moths are among our most beautiful insects. The "trimming" of forest undergrowth and natural areas and the catching of these insects for collections and jewelry has drastically curbed their population. Though some of these insects are harmful to plant life, others are necessary for the pollination and continuation of some plants.

Objective:

To become aware of the importance of butterflies and moths to our planet

Grade Level: K-5

Time: 30-40 minutes

Materials: Seeds from any native grasses or weeds

Procedure:

1. Discuss the beauty of butterflies and why they are called "Jewels of the Sky." Butterfly wings are made of scales. When touched the scales fall off. If many scales are lost the butterfly is unable to fly. Emphasize that it is much better to watch butterflies and leave them alone instead of trying to catch them.

2. Butterflies and moths need tall weeds or grasses in which to live. Often when people cut their lawns they don't think about leaving some long grass for these insects. Maybe the children can convince parents to leave a little part of the landscaping long or natural for a butterfly garden.

3. Arrange for a small section of the school yard to be left alone by the landscapers or mowers. Plant the section with the native grass or weed seeds. Help the children feel good about creating a safe place for these insects.

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Follow-up Questions:

1. Do you understand why it is best to leave these insects alone?

2. Do you realize that the insects can be harmful when they eat plants, but very helpful when they pollinate plants that bees are unable to pollinate?

Evaluation: Do the children enjoy watching for butterflies and moths in the school garden? Many children like to put insects in a jar. Though the loss of one insect is not major, the children could be helped to realize that it could have pollinated many flowers, and now there will be fewer flowers because of its loss. This is a beginning to help them appreciate the interconnectedness of all living things on our planet.

Further Suggestions:

1. Make a large butterfly out of construction paper, fold it, and pull paint-covered string through the paper to demonstrate the symmetry of butterflies and moths.

2. Write a language experience story about their butterfly garden and share it with parents.

3. Children would enjoy seeing an article in their school or local paper about their butterfly garden.

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Title: A BIRD IN HAND, AND MAYBE A SQUIRREL, TOO

Introduction: In the early 1900s huge flocks of pigeons, geese, and ducks flew over the U.S. Due to habitat loss, over-hunting, and the chemical DDT which causes egg shells to be too thin to sustain an embryo, these populations have seen a great decline. The value of birds is difficult to ascertain. Birds eat insects which are both beneficial and harmful to man. Domestic birds are in no danger, but our songbirds are declining in number. One of the main reasons is due to loss of tropical rainforests where many of these birds winter. In this activity children are empowered to help these birds by making their backyards more "user friendly" to our songbirds and enjoy squirrels that often frequent our yards, also.

Objective:

To become more aware of the plight of songbirds on our planet

Grade Level: K-5

Time: 45 minutes

Materials: Scraps of nest building materials such as yarn, string, rubber bands, and twigs
Two berry containers for each child
Hollowed-out orange or grapefruit half
Bird seeds
Scissors
Rulers
Wire or string to hand feeder (one per student)

Procedure:

1. Discuss the plight of birds and how each child can make a difference in their backyards by helping birds make their homes there.

2. Have students build a container for bird nest material using scraps of yarn, string, rubber bands, cotton, etc. Cut into small pieces which a bird could pick up and carry off to build a nest. All these pieces should be 2" to 3" long (good measuring activity). Put the pieces into a plastic berry container. To complete, put the

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second berry container upside down over the first and tie in several places. This will keep the pieces from blowing all over the neighborhood. A long string or wire should be attached which can be used to hang the building materials from a tree.

3. Have students take nests home to hang up. Caution children that their containers should be hung up high and that parents should do this for them.

4. Tell students that squirrels also make nests. Suggest that they watch to see if squirrels also use these materials for nest-building, or if they use other materials.

5. The second project involves students preparing food for their bird friends. Attach wire or string to a grapefruit or orange rind that has been halved and scooped out. Fill the fruit with an assortment of seeds. If possible, a previous fall activity could have been gathering seeds around the neighborhood to use in their bird feeding stations. Cover it tightly with recycled paper to avoid spills on the way home. Again, tell the children to observe whether or not squirrels enjoy these seeds.

Follow-up Questions:

1. How has life become more difficult for songbirds in our own backyards?

2. What have we done today that will help birds that visit our homes?

3. What are some other ways we might be able to help?

4. How do birds make our planet more beautiful and interesting?

5. Can you think of ways that squirrels might be necessary to our environment? Squirrels bury nuts and often forget where they were buried. This might result in trees springing up from the nuts.

Evaluation: A few days after this activity is completed, ask the children if they were able to find a place for their bird and squirrel projects. What kinds of bird activity have they seen? Do they think their yards are a nicer place for birds and squirrels now?

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Further Suggestions:

1. Draw pictures of several of the more common birds found in your area.

2. Help students make a graph of the birds found in their backyards. Are there more robins or sparrows? What bird do you enjoy watching the most? Do your yard birds eat worms or seeds?

3. Instead of making individual projects for each child's yard, a classroom tree might be more appropriate. An old Christmas tree could be trimmed with popcorn, stale doughnuts, berries, etc. and set out on the school grounds to help winter birds find food.

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Title: WHAT'S BLOWIN' IN THE WIND?

Introduction: Wind can be very useful on our planet when it spreads seeds and lifts ladybugs to faraway gardens to control aphids. Wind can be harmful when it blows litter to animal habitats both on land and water. Many ocean dwelling species die when they mistake plastic rings from six-packs of beer and pop for food or become entangled in them. Eating the plastic causes internal damage from which the animals are unable to recover.

Objectives:

To demonstrate how wind can be helpful by dispersing seeds
To demonstrate how wind can be harmful by blowing litter into animal habitats

Grade Level: K-3

Time: 20 minutes

Materials: Several sizes of seeds which could easily be collected in the fall around the neighborhood

Procedure:

1. Describe how seeds are blown in the wind to form new plants.

2. Describe how both beneficial (ladybugs) and harmful bugs are blown far and wide with the help of wind.

3. Talk about the importance of containing litter so that it stays inside trash cans and landfills rather than blowing about and causing problems for wildlife. Land animals can become entangled in litter. Ocean animals can eat things that are harmful to them causing death to both types of animals.

4. Have children take the seeds outside on a windy day. Let them release the seeds and observe what happens. Tell the children to also watch for signs of seed dispersal on their way to and from school.

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5. Before going back into the classroom pick up litter on the playground.

Follow-up Questions:

1. What happens to seeds, bugs, and trash on windy days?

2. Which seeds travel furthest and which seeds are more difficult to move?

3. What can you do to prevent trash from blowing into other animal habitats? (Putting lids on trash cans is empowering the child to help cut down on litter!)

Evaluation: Did the children enjoy working the seeds dispersal? Did they seem enthusiastic about helping to keep our planet a cleaner place? Did they make a connection between wind and seed, insect and trash dispersal?

Further Suggestions: Help children find plants with seeds which they can open and observe the seed dispersal. Cattails and milk weed pods, both of which are quite common in wet areas, are excellent for observing seed dispersal as they contain so many seeds! Of course, dandelions are also excellent to observe.

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Title: LORAX LOVERS

Introduction: Environmental degradation, ozone holes, species extinction, etc. are enormous problems facing our planet. Young children are simply not sophisticated enough to understand the implications of these problems. In the book The Lorax these problems are described and illustrated in a way that helps young students begin to think about becoming caretakers of our Earth.

Objectives:

To become aware of environmental problems
To realize the importance of caring for plants

Grade Level: K-3

Time: 30-40 minutes

Materials: The Lorax by Dr. Seuss (See Resource Section)
Bean seeds
Small milk cartons
Soil

Procedure:

1. Read The Lorax.
2. Hold up a package of seeds and say that the Once-ler found a few more seeds so that each child can have a special plant.
3. Go outside and find a few rocks to put in the bottom of the milk cartons for drainage. Add soil and plant the bean seed. Return to the room and water carefully.
4. Explain to the children that the seeds will stay at school until they have begun to grow so that you can make sure all seeds sprout.

Follow-up Questions:

1. Why did the Once-ler want to cut down the Truffula trees?

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2. Why did he cut so many?

3. What other way might he have done his work so that there would still be Truffula trees?

4. Is this book fact or fantasy?

5. Do you think there might be real Once-lers in our world?

6. What are they doing to hurt our planet?

7. How can each of you be a Lorax?

Evaluation: Were the children able to discuss how the Once-ler hurt the environment? Could they tell how the Lorax was a friend to the trees and animals? Were they able to transfer the information from the book to the real world?

Further Suggestions:

1. The Once-ler was never illustrated completely. Only his eyes, arms or legs were shown. Have the children draw a picture of what they think the Once-ler looks like.

2. Role playing could be used effectively with this story.

3. Children might be excited to learn about plant species which are in danger of extinction on our planet. Lessons could be developed around the dangers to humankind in losing plant species as so many plants have medicinal value that we are only beginning to discover. A cure for cancer could be found in a species that is in danger of extinction.

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Title: TRUFFULA TREES AND MORE!

Introduction: The students combine fiction and action to help the environment.

Objective:

To learn the results of clearing the forest

Grade Level: 4-6

Time: Initial activity, two hours; growing trees, seven months

Materials: The Lorax by Dr. Seuss (See Resource Section)
Seeds from a Russian Olive tree or other species that is hardy and will grow quickly
Potting soil or peat moss
Empty milk carton bottoms (1/2 gallon size)

Procedure:

1. Read The Lorax to the students.

2. Ask if they can make any comparisons with the book and the forests of today. (If the students are unfamiliar with the plight of the rainforest, the teacher should help them to see some of the similarities.)

3. Explain the following to the students:

   * Some of the benefits of a forest include the ability to recycle carbon, nitrogen, and oxygen, to determine climatic conditions, to prevent erosion and help keep water clear, and to house many species of plants and animals.

   * There are many goods supplied by a forest but the main one is wood. The primary use of wood for fuel or industrial purposes varies around the world.

   * The rainforest is being depleted at an alarming rate, but other forests (temperate) remain constant because of reforestation.

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4. Tell the students that although reforestation may not be necessary in their community, they can still help the environment by planting trees.

5. Plant the tree seeds according to the directions on the package. Most trees should be ready to plant outside in May or June.

6. Help the students to determine an appropriate place to plant their tree. It may be on the school property or in their own yard.

Follow-up Questions:

1. Are there people or organizations like the Lorax today? Who are they?

2. Do you think the Once-ler intended to deplete the entire forest. Why or why not?

3. The Brown Bar-ba-loots, the Humming-Fish, and the Swomee-Swans were all affected by the loss of trees. How would your life be different if the trees in your community were all cut down?

4. What changes could the Once-ler have made to possibly prevent the destruction of the forest and the other bad effects his business created?

5. If the boy plants the Truffula Tree seed, what will happen as a result?

Further Suggestions:

1. Have students research the actions that businesses take to get ahead that may hurt the environment.

2. As an alternative to growing trees, there are organizations that give away tree seedlings free of charge that the students could plant.

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VII. PROVING YOUR POWER

Title: HAIKU FINALE

Introduction: This activity is designed as a culminating activity for the unit.

Objectives:

To learn the components of Haiku poetry
To express their feelings about the environment

Grade Level: 4-6

Time: One to two hours

Materials: Handout #18, "Poetry Examples"
Handout #19, "Components of Haiku Poetry," transparency
Overhead projector
Appropriate instrumental background music
Paper
Paint, paint brushes
Calligraphy markers

Procedure:

1. Recite one of the poems from Handout #18.
2. Ask the students if they recognize what kind of poetry it is.
3. Tell them that it is Japanese poetry called Haiku. The poems are full of strong images about nature.
4. Put Handout #19 on the overhead projector. Explain the components and answer any questions.
5. Read the remainder of the poems on Handout #18 and put it on the overhead as examples for students.
6. Play music and have the students write some Haiku poems. Encourage the students to write about the environment or some other subject addressed in this unit. Put the components up again for easy reference.
7. The students should choose their favorite poem and portray it in painting.

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8. When the paint is dry, have them write their poetry on the picture with a calligraphy marker.

9. Invite parents and other students to a poetry reading. Play the music and display his/her painting while each student reads his/her poem aloud.

Follow-up Questions:

1. Did you like writing Haiku poetry? Why or why not?

2. Compare it to other forms of poetry. What are similarities and differences?

3. Poetry is only one way to express your feelings. What are some other methods?

Further Suggestions:

1. Take pictures of each of the paintings with slide film. Video tape each of the slides while the students recite their poetry. In the end you will have a video taped production for a parent program, or student check out.

2. Publish a book of student poetry.

3. Take the opportunity to explore and learn more about the country of Japan and its culture.

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POETRY EXAMPLES
by Diane Simmons

1. Golden Autumn leaves,
   Falling silently downward;
   Crunching under feet.

2. Bracing cold water,
   Briskly splashing over rocks;
   Clean, clear mountain streams.

3. Sleek, striped, beautiful,
   A Siberian tiger;
   Drinking at the pool.

4. Many colored birds,
   Chirping loudly to the sun;
   Morning has begun.

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COMPONENTS OF HAIKU POETRY

1. three lines
2. seventeen syllables
3. 5-7-5 syllable pattern
4. one main subject
5. experienced or felt with senses
6. usually doesn't rhyme
7. strong images of nature
8. phrases acceptable

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Title: I WILL HELP!

Introduction: In this activity children will choose an endangered animal on which they would like to become an "expert." They will need to learn about their animal's habitat and why the animal is in danger of extinction. They will need to think of one or two ways to help their animal. Children will also be able to learn about cooperation as older students come into the room to read articles to younger children.

Objective:

To learn about endangered animals and how students might improve the situation

Grade Level: K-3

Time: 30 minutes

Materials: Books and magazine articles on endangered animals, highly recommended are National Geographic and Ranger Rick magazines
Handout #20, "My Endangered Species Pet"

Procedure:

1. Hold up magazines about various endangered animals. Let each student choose a favorite animal article.

2. An older student should read the article to a younger child.

3. With help from the older student, have them complete Handout #20.

4. Come together as a large group. Each child should share the handout with peers. This information should be saved as it is the basis for "My Endangered Species Pet" activity where the child will make his endangered animal.

Follow-up Questions:

1. What are the reasons some animals are endangered?

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2. What can be done to help these animals?

3. Many zoos are now trying to save animals. Let's make a list of the good reasons for putting animals in zoos or wild animal parks and a list of the reasons animals might not like to live in these places.

Evaluation: Were the children able to state why their animals were endangered? Were they able to think of things that might be done to save the animals?

Further Suggestions:

1. A first-hand visit to a nearby zoo, wild animal park or aquarium would give children an opportunity to view some endangered species up close.

2. Park service and state wildlife employees might be willing to share information with the children also.

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Handout #20

MY ENDANGERED SPECIES PET

This is a picture of my endangered species.	This is where he lives.
This is why he is endangered.	This is where he would be safest.

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Title: MY ENDANGERED SPECIES PET

Introduction: In this activity children will make a cardboard model of her/his favorite endangered animal in preparation for their Mastery Performance. These models will be placed in a habitat of the child's choosing based on where they believe their animal will be safest.

Objective:

To become more aware of endangered animals and their habitats

Grade Level: K-3

Time: Two thirty minute sessions

Materials: Cereal box for each child; for younger children the teacher may choose to cover the cereal boxes with paper of appropriate animal colors ahead of time
A variety of scraps including paper, yarn, fabric, etc.
Magazines and books used in "I Will Help!"

Procedure:

1. Remind children that they have already chosen their favorite endangered animal (This was done in "I Will Help!" activity.) Today they will make that animal out of a cereal box.

2. Demonstrate how spots, eyes, noses, and tails can be cut out of scraps of paper, etc. and glued onto their animal boxes.

3. Pass out cereal boxes and have students work on their models. You may need to complete them another day.

4. As a large group, allow each child to display his/her animal and again state why the animal is endangered and in what type of habitat the animal lives. Allow each child to also state where they would like their animal to live. Would their animal be happiest in a zoo, wild animal park, aquarium, or in their natural habitat?

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Follow-up Questions:

1. What are some of our endangered animals?

2. Where do they live?

3. Where is the safest place for these animals to be?

4. Where do you think the animals are happiest?

Evaluation: Were the children able to approximate the features of their endangered animal? Are they beginning to think about what is best for these animal species in the way of habitat? Are they able to make recommendations on safe habitats?

Further Suggestions:

1. Endangered animals could be created out of clay. Dioramas could be made to show the animals natural habitat and the clay animals could be set in the dioramas.

2. Endangered species puppets could also be made instead of the cereal box models.

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Title: LIGHTS, CAMERA, ACTION!

Introduction: In the activities in this unit students have learned about many types of habitats and the animals (including man) which live in them. They have examined tiny creatures in their natural habitat, discussed why even ugly creatures like bats are necessary on our planet, and have become empowered to make their own backyards better habitats for wild creatures. In this culminating activity they will share their knowledge with parents and interested people in their communities. They will tell how animals and habitats including their own are in need of caretakers.

Objective:

To demonstrate their knowledge of habitats and endangered species

Grade Level: K-3

Time: 1 hour

Materials: Various "habitats" should be placed around the room. They should include water (the mural from "Animal Lovers Create A Beautiful, Watery World), a zoo which could be a box with strips of black construction paper over the front to depict bars, a wild animal park with could be green paper set on a table and a fence drawn around it, and aquarium with "walls" drawn around blue paper, and the wild with green paper covering a table with no fences or walls.

Procedure:

1. Send an invitation to parents and other interested people to attend the program.

2. One at a time, have each child come to the front of the room and with his/her cardboard endangered species animal. Each student will tell the name of the animal, where it lives, and why it is endangered. The student will then place the animal in the safest habitat (water, zoo, wild animal park, aquarium, or the wild) and tell why the animal should live there. See further suggestions for a different way to do this step.

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3. After each child has "saved" his/her animal, read the book made in "Animal Habitats."

4. Serve animal crackers and punch while the children and parents walk around the room to observe other things done during this unit. "Counting Critters" could be set up on the computer, globes should be on display, people habitats, and the dinosaur cookie project could be displayed on bulletin boards, ant farms should be accessible, the Jungle Shoes tape could play softly in the background, etc.

Follow-up Questions:

The next day ask:

1. Did you teach your family anything yesterday?

2. What did they enjoy?

3. What else could we have done to show how important all habitats are to our planet?

Evaluation: List strengths and weaknesses of the various activities. What other types of activities should be included?

Further Suggestions:

1. Rather than having the students present their animal in front of a large group of adults, it might be more exciting and less frightening to film their presentations several days in advance with a camcorder. Parents could then watch the tape the evening they come to school.

2. Hopefully children will be concerned about endangered animals and habitats on our planet and will want to work toward improving our planet. Have them bring things to school to be recycled. The money from the recycling project could be given to a zoo to sponsor an endangered animal, to buy trees to plant in the neighborhood, etc. Emphasize that this unit of study should never be "over." There will always be much that the students can do to be caretakers of our miraculous planet!

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VIII. RESOURCE SECTION

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